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THE LANCET

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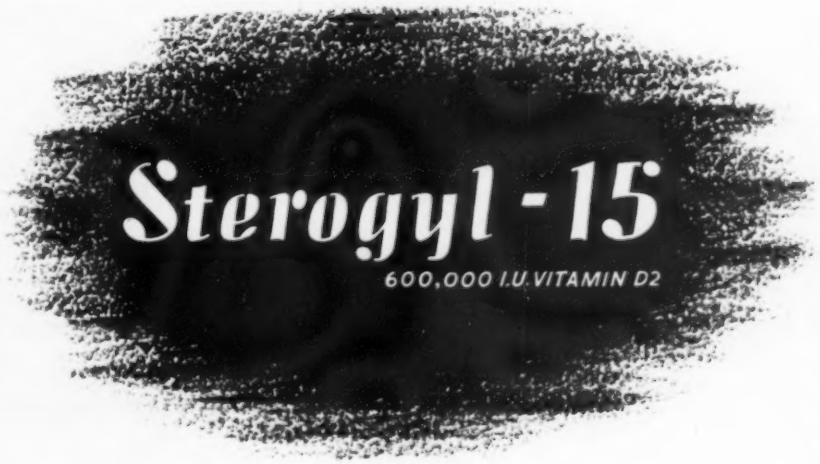

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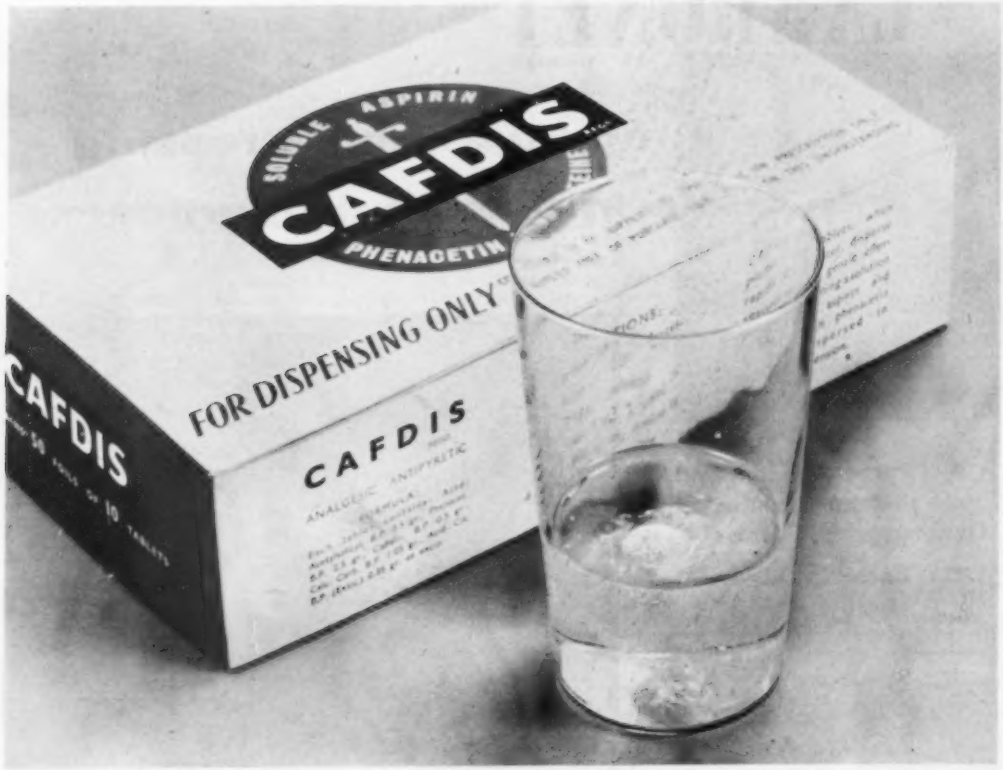

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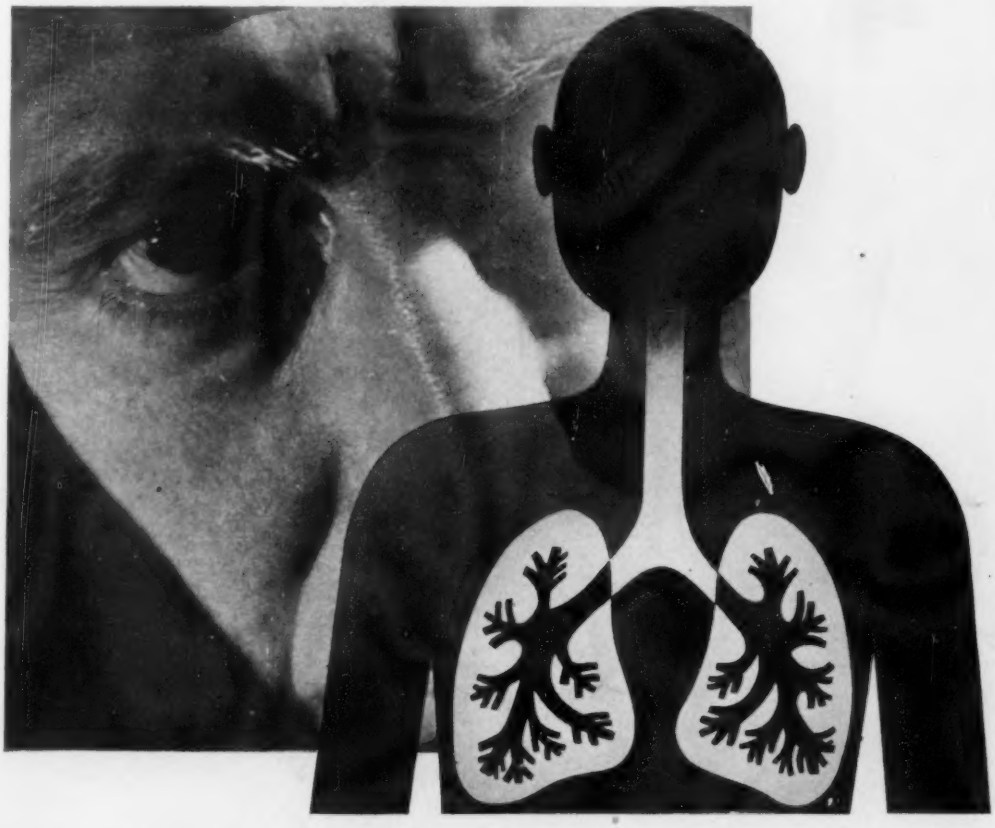

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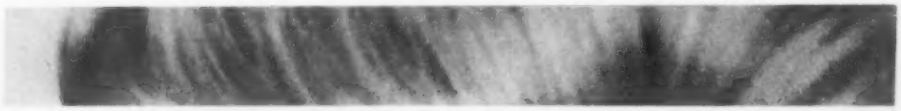

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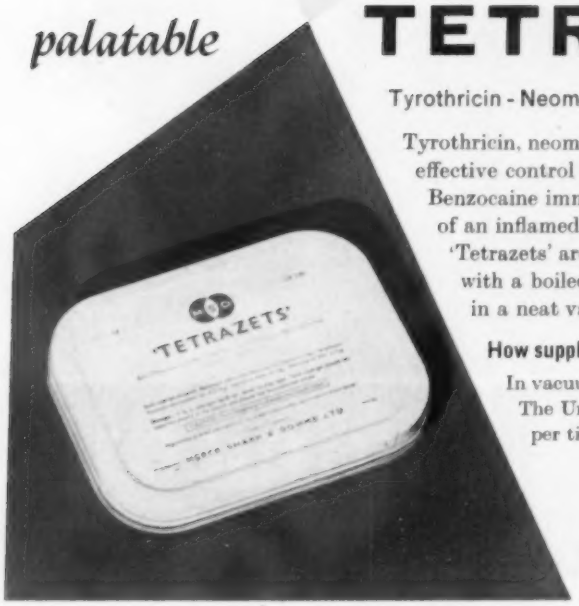

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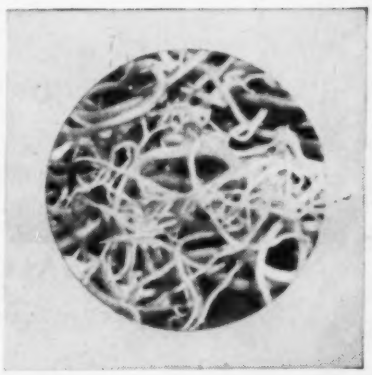

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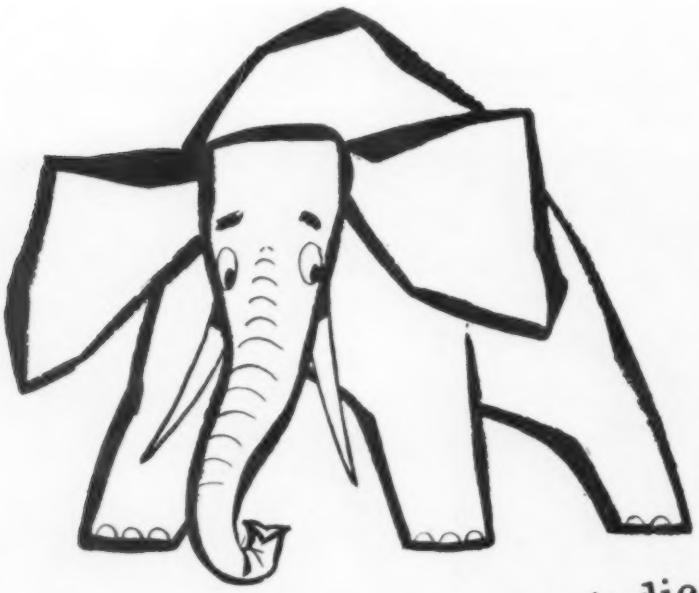

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[1] *The treatment of Hæmorrhoids. Practitioner, 178, 230, 1958.*

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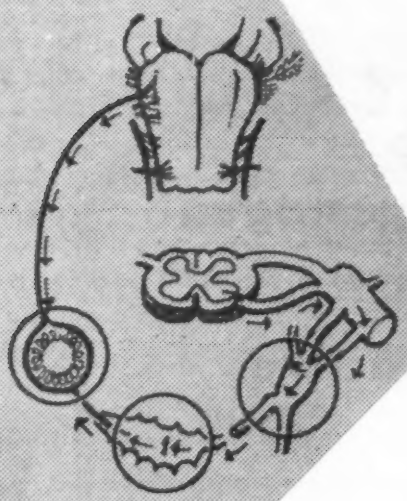

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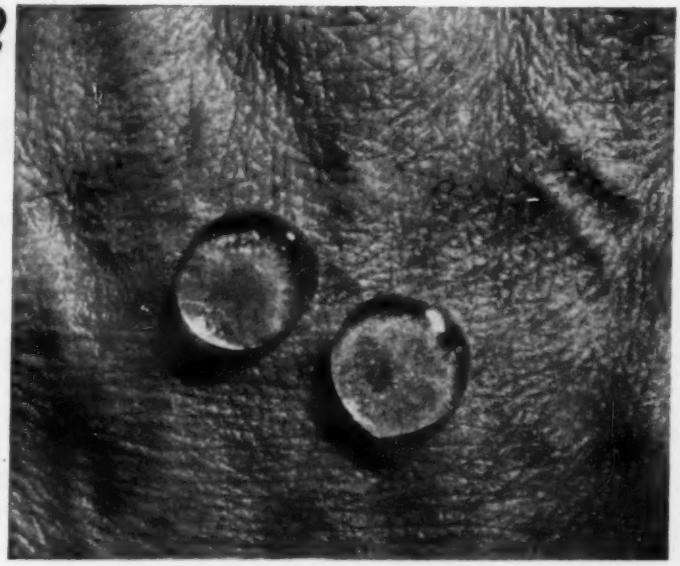

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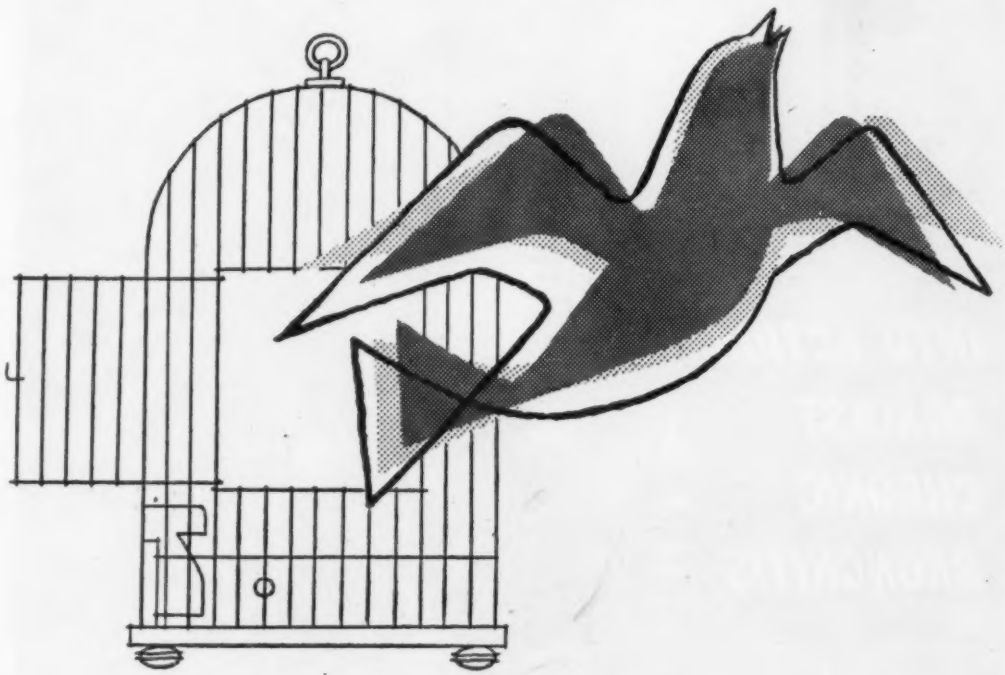

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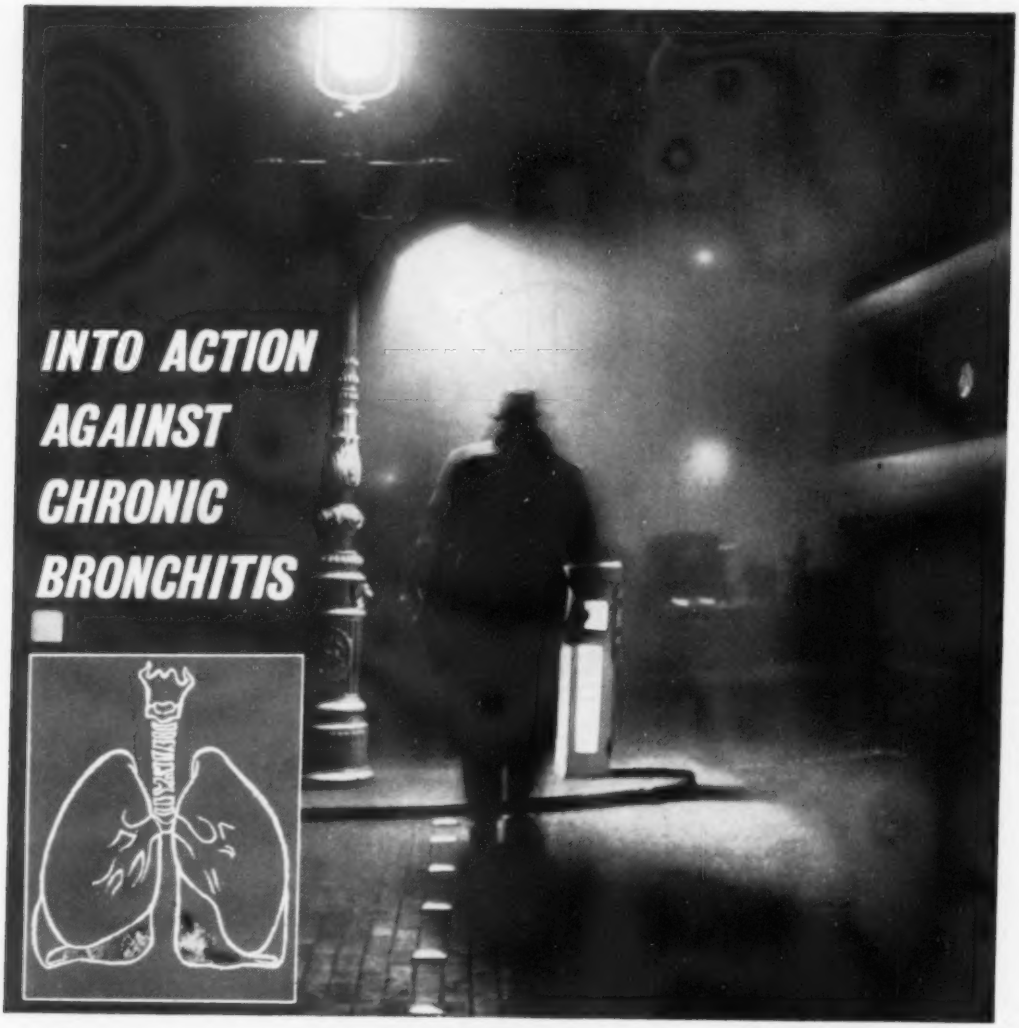

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PROGNOSTIC AND DIAGNOSTIC VALUE OF SERUM GLUTAMIC OXALOACETIC TRANSAMINASE IN SUSPECTED CARDIAC INFARCTION

K. D. KEELE
M.D. Lond., F.R.C.P.
CONSULTANT PHYSICIAN

FRANK GOULDEN
F.R.I.C.
BIOCHEMIST

M. J. D. NEWMAN
M.D. Cantab., M.R.C.P.
SENIOR MEDICAL REGISTRAR

ASHFORD HOSPITAL, MIDDLESEX

CARDIAC infarction is sometimes unaccompanied by the usual electrocardiographic changes. The character of the pain is not uncommonly misleading; and the other common aids to diagnosis, such as fever, erythrocyte-sedimentation rate, and white blood-cell count, are quite non-specific.

In 1954 LaDue et al. showed that the serum glutamic oxaloacetic transaminase (S.G.O.T.) is seldom increased except where there is destruction of cardiac muscle or hepatic tissue. We have studied the diagnostic and prognostic value of S.G.O.T. in 135 cases of suspected cardiac infarction admitted " off the street ".

Material

The cases selected were admitted to Ashford Hospital in the course of a year with an initial diagnosis of cardiac infarction made either by the general practitioner or by the admitting doctor. Since it is only between twelve hours and three days after the onset of cardiac infarction that a raised S.G.O.T. is consistently found (see table I), cases in which the S.G.O.T. was normal but was not estimated during this period have been excluded. In all, there were 135 attacks of pain in 129 patients suspected of cardiac infarction. They are divided into two groups according to whether a raised or a normal S.G.O.T. value was found during the period from twelve hours to three days after onset.

Methods

The earlier S.G.O.T. estimations were carried out by the colorimetric method of Cabaud et al. (1956). This procedure proved too tedious and time-consuming for routine use; it was simplified by adding a dilute solution of sodium hydroxide to the dinitrophenylhydrazine complex and omitting the protein precipitation and toluene extraction. The resulting brown colour was read in a Gallenkamp photoelectric colorimeter with an Ilford 625 filter against a standard curve prepared with dilutions of pure pyruvic acid.

One unit of S.G.O.T. is defined as the activity by 1 ml. of serum that results in the formation of chromogenic material equivalent to 1 μg. per ml. of pyruvic acid under conditions of the test (20 minutes at 25° C). Normal values have been taken as 0–50 units.

The modified test is no more difficult to perform than estimation of alkaline phosphatase and has now been incorporated in the routine laboratory methods.

Results

CASES WITH RAISED S.G.O.T.

With Diagnostic Electrocardiogram (69 Cases)

In this study an electrocardiogram was accepted as diagnostic of recent cardiac infarction when it included the following features: (1) Q wave deeper than a quarter the height of R and ST elevation of 2 mm. or more followed by T wave inversion; or (2) Q wave and symmetrically inverted T wave known to be of recent origin. These changes were found in 69 instances in 67 patients.

In these cases, S.G.O.T. began to rise as early as six hours after the onset of pain or, in 1 case, as late as twenty-four hours. The peak reading was usually found between twenty-four and forty-eight hours, and fell to normal in three to seven days. These time relations are shown in table I. In the presence of the electrocardiographic changes described above, a normal S.G.O.T. was found in only 2 attacks in 1 patient.

TABLE I—PROPORTION OF S.G.O.T. ESTIMATIONS RAISED, RELATED TO TIME AFTER ONSET IN 69 ATTACKS WITH DIAGNOSTIC ELECTROCARDIOGRAPHIC CHANGES AND RAISED S.G.O.T. AT SOME TIME

—	0–6 hr.	7–12 hr.	13–18 hr.	19–24 hr.	25–36 hr.	37–48 hr.	3rd day	4th day	5th day	6th day
Total no. of estimations	3	15	8	27	24	29	48	43	24	10
Percentage of raised S.G.O.T. values ..	33	80	100	96	100	100	85	63	38	10

Prognosis.—Of 61 cases in whom S.G.O.T. was estimated during the peak period between twenty-four and forty-eight hours:

12 died within one month and their maximum S.G.O.T. averaged 320 units (range 88–660; S.D. 130).

40 survived one month, and their maximum S.G.O.T. averaged 153 units (range 25–320; S.D. 71). " Student's " t test applied to the difference of these means gives $t = 4{\cdot}4$; $n = 50$; $p = < 0{\cdot}01$ —a highly significant difference.

21 cases developed congestive heart-failure, left ventricular failure, or hypotension (i.e., systolic pressure below 100 mm. Hg); their S.G.O.T. averaged 240 (range 38–600; S.D. 130).

40 cases without these complications had an average S.G.O.T. of 161 units (range 25–320; S.D. 70). $t = 3{\cdot}1$; $n = 59$; $p = < 0{\cdot}01$ —again a highly significant difference.

20 cases of anterior infarction with pathological Q wave in five or more of six chest leads had an average S.G.O.T. of 231 units (range 70–452; S.D. 103).

14 cases with pathological Q wave in three or fewer chest leads had an average S.G.O.T. of 145 units (range 63–240; S.D. 60). $t = 2{\cdot}8$; $n = 32$; $p = < 0{\cdot}01$.

These calculations show that there is a highly significant correlation between the level of S.G.O.T. during the second day and the prognosis in terms of immediate mortality and occurrence of cardiac failure or severe hypotension. In the case of anterior infarcts, there is also a correlation between the extent of the electrocardiographic changes and the height of the S.G.O.T.

With Abnormal Electrocardiogram Not Diagnostic of Cardiac Infarction (27 Cases)

In 27 attacks in 25 patients a raised S.G.O.T. was found, but the electrocardiogram, although abnormal, did not show the changes diagnostic of cardiac infarction mentioned above.

21 cases in this group were diagnosed clinically as cardiac infarcts, and the diagnosis was proved at necropsy in 5. 14 of these patients had had previous angina or cardiac infarction. During the first week the following electrocardiographic abnormalities were found: residual changes from previous infarct in 7; ST depression and T inversion

TABLE II—COMPARISON OF MORTALITY-RATE IN ONE MONTH AND OCCURRENCE OF HEART-FAILURE OR HYPOTENSION IN CASES WITH AND WITHOUT ELECTROCARDIOGRAPHIC CHANGES DIAGNOSTIC OF CARDIAC INFARCTION

Electrocardiogram	No. of cases	Early mortality (%)	Heart-failure or hypotension (%)
Diagnostic	69	22	37
Abnormal but not diagnostic	21	24	29

in 6; T inversion alone in 5; ST elevation alone in 2; left-bundle-branch block in 1.

The timing of the S.G.O.T. rise was similar to that in the group with diagnostic electrocardiographic changes, beginning after six to twenty-four hours, reaching a maximum on the second day, and falling to normal in an average of four days. In 1 case the S.G.O.T. remained raised for ten days; at necropsy two months later, multiple small areas of fibrosis and infarction were found in the heart muscle.

In 6 cases, there was a demonstrable cause of the pain other than cardiac infarction. The diagnoses were:

(1) Primary pulmonary hypertension.—A woman of 55 with cor pulmonale developed retrosternal pain and increased dyspnœa; S.G.O.T. rose to 80 units after forty-eight hours, but at necropsy there was no sign of cardiac infarction or coronary disease.

(2) Dissecting aneurysm of the aorta.—It was found that the coronary ostia were occluded by the dissection.

(3) Mediastinal tumour.—A woman of 36 who was admitted with severe chest pain had a constantly raised S.G.O.T. (80–100 units); at necropsy, metastases were found in both liver and myocardium.

(4) Acute pericarditis (124 units).

(5) Pulmonary embolism in a case of mitral stenosis (140 units).

(6) Acute bronchitis with electrocardiographic evidence of right ventricular strain (60 units).

Prognosis.—In the 21 cases of probable myocardial infarction in this group, the mortality within one month and the number developing heart-failure or severe hypotension were approximately the same as in cases with diagnostic electrocardiographic changes (see table II). All were given the same standard treatment.

Normal Electrocardiogram (8 Cases)

In 8 of the 135 suspected attacks of cardiac infarction, the S.G.O.T. was raised but none of the electrocardiographic abnormalities specified above appeared during the first week. 6 were considered to be cases of cardiac infarction. Of these, 1 died on the operating table two months later and was found to have a healing infarct and recent coronary thrombosis; 1 has since had cardiac infarction with a rise in S.G.O.T. and T-wave inversion, and 2 have angina of effort. None developed hypotension (systolic pressure below 100 mm. Hg) or heart-failure.

1 patient in this group had partial rupture of the left pectoralis major and 1 case was diagnosed as pulmonary embolism; in both, the rise in S.G.O.T. was sustained and unlike the pattern usually found in cardiac infarction.

TABLE III—RELATION OF S.G.O.T. DURING THE SECOND DAY AFTER ONSET TO COMPLICATIONS AND MORTALITY IN ALL CASES DIAGNOSED AS CARDIAC INFARCTION

S.G.O.T. (units)	No. of cases	Proportion developing heart-failure or hypotension (%)	Mortality in one month (%)
>300	9	90	90
200–300	20	40	25
<200	57	23	5

CASES WITH NORMAL S.G.O.T.

Diagnostic Electrocardiogram (2 Cases)

As mentioned above, 1 patient had two attacks of retrosternal pain with electrocardiographic evidence of recent infarction but with no rise in S.G.O.T. during the critical period. Necropsy later demonstrated healing anterior and posterior infarctions.

With Abnormal Electrocardiogram Not Diagnostic of Cardiac Infarction (18 Cases)

The diagnoses made included angina pectoris with pain at rest in 9 cases, hypertensive left ventricular failure in 5, long-standing dissecting aneurysm of the aorta in 1, while in 3, no final diagnosis was arrived at.

In contrast to those with raised S.G.O.T. none of these patients died and none developed hypotension, but two of the anginal patients developed congestive cardiac failure.

Acute coronary insufficiency without infarction is not a diagnosis generally susceptible of proof, but it does appear that anginal pain at rest may occur without significant muscle necrosis and carries a somewhat better immediate prognosis than when the S.G.O.T. is raised (Goble and O'Brien 1958).

With Normal Electrocardiogram (13 Cases)

In 13 cases, both S.G.O.T. and electrocardiogram remained within normal limits. In 2 of these patients the history suggested angina of effort; neither has died or developed any complication. In the other cases the final diagnosis included bronchial carcinoma, acute bronchitis, gallstone colic, myopathy with pain in the pectoral muscles, œsophagitis, and anxiety state; in 4 no firm diagnosis was reached.

Conclusions

This survey shows that the S.G.O.T. is almost always raised between twenty-four and forty-eight hours after a myocardial infarct. Of 75 attacks of pain proved to be due to cardiac infarction at necropsy or by the appearance of diagnostic electrocardiographic changes, only 2 were associated with an S.G.O.T. of less than 50 units during this period—less than 3% of false negative results.

The height of the S.G.O.T. at its peak is closely related to prognosis. In the cases diagnosed as cardiac infarction, a reading of over 300 units was associated with early death in 8 out of 9 instances, the 1 exception being a man of 30; of 20 cases with S.G.O.T. between 200 and 300 units, 40% developed heart-failure or a fall of systolic pressure below 100 mm. Hg, and 25% died within one month; of those with S.G.O.T. under 200 units, 23% developed heart-failure and 5% died (see table III). Since the majority of deaths were due to heart-failure, these figures confirm clinically the experimental finding of Agress et al. (1955) that the maximum level of S.G.O.T. is related to the mass of muscle infarcted.

Other conditions may occasionally give rise to central chest pain and to a raised S.G.O.T. A " false positive " was found in 7 out of 104 cases in this series with raised S.G.O.T., and in 1 case cardiac infarction occurred but was secondary to dissecting aneurysm. Ostrow et al. (1956) have described raised S.G.O.T. in pulmonary embolism, and Kalmansohn and Kalmansohn (1957) in pericarditis. But, in the absence of such conditions, a raised S.G.O.T. in a patient complaining of retrosternal pain and with abnormal but non-specific electrocardiogram carries the

same prognostic significance as diagnostic Q waves and ST–T changes. Even if the electrocardiogram shows no significant departure from the normal, a raised S.G.O.T. may indicate cardiac infarction, as was shown by 1 case in this series.

Summary

The diagnostic and prognostic value of S.G.O.T. is discussed with reference to 135 cases in which the patients were admitted to hospital with suspected cardiac infarction.

False positive results were found in 7% and false negative results in under 2%.

The height of S.G.O.T. twenty-four to forty-eight hours after the onset of pain is closely correlated with the immediate mortality and the development of heart-failure.

Anginal pain at rest with abnormal but not diagnostic electrocardiogram and raised S.G.O.T. was found to carry the same prognostic significance as electrocardiographically proved infarction.

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PROSTATECTOMY
ANÆSTHETIC TECHNIQUE AND OTHER FACTORS AFFECTING PROGNOSIS

H. ELLIS
M.Ch. Oxon., F.R.C.S.
SENIOR SURGICAL REGISTRAR

R. A. L. LEATHERDALE
B.M. Oxon., F.F.A. R.C.S.
SENIOR ANÆSTHETIC REGISTRAR

UNITED OXFORD HOSPITALS

MANY techniques of anæsthesia—general, local, spinal, and epidural—have been advocated for prostatectomy: none is ideal or suitable for every case. Especially for the poor-risk patient, the method to be described here, which combines a low spinal with an abdominal field block and infiltration, appears to have definite advantages over general anæsthesia. Jennings Marshall used it in over 700 cases before describing it in 1954; and it was mentioned by Gordon-Taylor (1944), Rowbotham (1947), Dale et al. (1953), Swerdlow (1953), and in the newsletter of the New Zealand Society of Anæsthetists (1958).

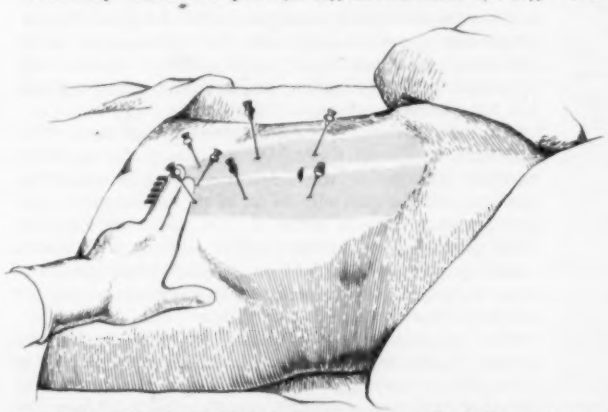

Fig. 1—The abdominal field block. The heavy barred line indicates the upper border of the symphysis pubis.

Anæsthetic Technique

With the patient sitting up, a low spinal analgesic is given, using 0·8–1·0 ml. 1/200 cinchocaine in 6% glucose (heavy 'Nupercaine'). This is injected slowly, without barbotage, and the patient is kept sitting for a few seconds after injection. This produces a block of the sacral nerve-roots.

Fig. 2—Injection of the local analgesic solution into the retropubic space. The point of the needle should be kept moving so as to avoid injection of any large amount of solution into a vessel of the prostatic plexus.

The patient is next laid supine and low rectus blocks are inserted as in fig. 1. It is important the two highest blocks should be at the level of, or just above the umbilicus. Then the line of the incision is infiltrated, as well as the spermatic cords as they leave the external inguinal rings. This ensures painless ligation of the vas. Finally 20–30 ml. local anæsthetic is injected into the retropubic space (figs. 1 and 2). The needle is inserted in the midline two fingerbreadths above the symphysis pubis and is directed downwards and backwards to strike the upper border of the symphysis. It is then redirected more posteriorly and inserted a further 5–6 cm. to lie in the retropubic space. During injection the point of the needle should be kept moving; this prevents injection of large quantities into a vessel of the prostatic plexus.

The choice of the local analgesic is a matter of individual preference; but—since large volumes are needed—the danger of an overdose of local analgesic must be borne in mind. It is the practice of one of us (R. A. L. L.) to have the requisite volumes of solution prepared before starting infiltration; thereafter no more is requested or permitted to be opened. Using lignocaine hydrochloride ('Xylocaine') we have found the following solutions satisfactory: 5 ml. 1% lignocaine hydrochloride for each rectus block (30 ml. solution containing 0·3 g. lignocaine), and 60–80 ml. 0·5% lignocaine for all further injections (0·3–0·4 g. lignocaine). All solutions contain adrenaline 1/200,000–1/400,000. In no case in this series has there been any toxic reaction to the local anæsthetic.

Marshall advised against the use of adrenaline because of possible adverse effects on patients with cardiovascular disease; but, using the concentrations mentioned, we have not observed any ill effects and we have been impressed with the absence of bleeding.

Advantages

1.—Because the systemic disturbance is slight, local analgesia has much to commend it in elderly patients with gross cardiovascular or pulmonary disease. The low spinal block leaves the sympathetic outflow unaffected and there is thus no fall

in the blood-pressure. The use of spinal analgesia alone—or of epidural analgesia sufficiently high to allow for the abdominal incision—increases the risk of arterial hypotension; and, while this may be corrected by vasopressor drugs, these may introduce new complications.

2.—Hæmorrhage is less with local than under general anæsthesia. This is partly the effect of the adrenaline in the local analgesic solution; and partly due to the unopposed action of the sympathetic fibres when the pelvic parasympathetic nerves are blocked.

3.—The patient can cooperate immediately after the operation. This is particularly useful in maintaining an adequate fluid intake and in physiotherapy. Patients are given a cup of tea on their return to the ward.

Disadvantages

1.—The technique is time-consuming for the anæsthetist.

2.—Multiple injections are obviously less pleasant for the patient than the single injection of an intravenous induction. Adequate sedation and the use of fine intradermal needles to raise skin weals before infiltration help to mitigate this.

3.—Spinal analgesia is regarded unfavourably by some anæsthetists and surgeons because of the risks of postspinal headache and of permanent neurological damage. Headache was never severe in this series, and it never persisted for more than twenty-four hours. We believe that the use of a fine-gauge needle (such as ' Pitkin ' 22 gauge) and careful lumbar-puncture technique are important. We also agree with Lake (1958) that all anæsthetic techniques carry some risk, and that in certain circumstances the advantages of a spinal outweigh the small hazard of neurological damage.

4.—Some patients have a dislike for local analgesia and much prefer to be unconscious during operation. A supplementary light general anæsthetic was in fact given in about 10% of patients in this series, thiopentone, nitrous-oxide/oxygen, and trichlorethylene being used. In exceptional cases the patient's preference may have to be overruled; but adequate preoperative sedation will be of considerable help.

The Investigation

Material

One-stage prostatectomy was performed in 340 consecutive cases either by the transvesical or by the retropubic route. 170 of these patients were operated on under local and spinal analgesia (group I) and 170 under general anæsthesia (group II). (About 6% of all cases of prostatic disease admitted to the United Oxford Hospitals, who were treated by a suprapubic cystostomy, sometimes permanent, are not included in this series.)

TABLE I—ANALYSIS OF CASES BY SYMPTOM NECESSITATING ADMISSION, AGE, AND PREOPERATIVE BLOOD-UREA

Group I.—Local and low spinal anæsthesia.
Group II.—General anæsthesia.
Number of deaths is shown in parentheses.

—	Group II	Group I
Symptom on admission:		
(*a*) Emergency { Acute retention	93 (*15*)	117 (*15*)
Chronic retention	18 (*1*)	20 (*4*)
(*b*) Waiting-list { Prostatism	57	30 (*2*)
Hæmaturia	2	3
Age-groups:		
Under 50	1	1
51–60	21	7
61–70	60 (*6*)	58 (*7*)
71–80	66 (*6*)	76 (*8*)
81–90	21 (*4*)	27 (*6*)
Over 90	1	1
Preoperative blood-urea: (mg. per 100 ml.)		
Under 40	79 (*4*)	73 (*7*)
41–50	42 (*1*)	50 (*7*)
51–60	22 (*4*)	17
61–70	13 (*4*)	14 (*5*)
71–80	2 (*1*)	7
Over 81	8 (*1*)	7 (*1*)
Not estimated	4 (*1*)	2 (*1*)
Total numbers of cases	170 (*16*)	170 (*21*)

TABLE II—PREOPERATIVE CONDITION OF PATIENTS

Preoperative condition	Group II	Group I
Fit for age	114 (*7*)	63 (*3*)
Symptomless hypertension	33 (*2*)	45 (*2*)
Gross cardiovascular disease *	13 (*5*)	25 (*9*)
Chronic bronchitis and emphysema	7	16 (*3*)
Pulmonary tuberculosis	0	3
Carcinoma of lung	0	2
Pneumoconiosis	0	1
Uræmia	1 (*1*)	6 (*3*)
Other diseases †	2 (*1*)	9 (*1*)
Total	170 (*16*)	170 (*21*)

Number of deaths is shown in parentheses.
* Gross cardiovascular disease includes congestive cardiac failure with or without hypertension, valvular disease, recent coronary thrombosis, and cerebral arteriosclerosis.
† Other diseases included 1 case of hydrocephalus and 1 of Parkinson's disease (fatal) in group I and 5 cases of anæmia, 2 of senile dementia 1 case of carcinoma of the pancreas, and 1 of myeloid leukæmia (fatal) in group II.

The patients operated on under general anæsthesia all received thiopentone and a short-acting relaxant for induction. Endotracheal intubation was performed and anæsthesia was maintained with nitrous-oxide/oxygen usually supplemented by either trichlorethylene or small doses of intravenous pethidine. Relaxation of the abdominal wall was obtained with either *d*-tubocurarine or gallamine triethiodide. Premedication, as befits the age-group, was light: atropine sulphate, gr. $^1/_{100}$, with or without morphine tartrate gr. $^1/_6$–$^1/_3$, according to the condition of the patients.

The proportion of patients operated on by the transvesical and retropubic routes was almost identical in each series—a quarter by the former and three-quarters by the latter. All cases had been diagnosed clinically as benign prostatic hypertrophy, but on microscopic examination of the gland 9 cases in each group had a carcinoma.

Results

Table I shows that local and spinal anæsthesia was used increasingly in older patients; and, as had been expected, there was a rise in mortality with advancing age. In both groups mortality was nearly 15% in octogenarians. Except in severe uræmia, the preoperative blood-urea levels were not of great prognostic significance. Emergency admissions for acute retention—three-quarters of all cases—had a mortality of 14%, in contrast to the 2% mortality of those admitted from the waiting-list. This discrepancy is even greater than that given by Riches (1950), who found that retention doubles the operative mortality.

From table II it will be seen that the group operated on under local and spinal analgesia included a much higher proportion of poor-risk patients (36·5%) than the group who were given general anæsthesia (13·5%). In the early period of this investigation, the local and spinal method was used in poor-risk cases only.

Symptomless hypertension (diastolic pressure over 100 mm. Hg) had no effect on prognosis; the mortality of these mild hypertensives—and of those patients who were considered generally fit for their age—was 4·7% in group I and 6·1% in group II. On the other hand in both groups more than a third of patients with severe cardiovascular disease died in hospital after operation, from congestive cardiac failure, coronary thrombosis, or cerebral thrombosis.

We have attempted to assess blood-loss in the two groups by the amounts of blood transfused at operation and postoperatively. 55 patients in group I needed no blood at all during operation, compared with 23 in group II; and 31 patients in group I needed two pints or more

TABLE III—ANALYSIS OF DEATHS

Group	Preoperative condition	No. of deaths	Cause of death
II	Fit or symptomless hypertension	9	3 pulmonary infarcts 2 uræmias 1 coronary thrombosis 3 bronchopneumonias
	Cardiovascular disease ..	5	2 cerebral thromboses 2 cardiac failures 1 coronary thrombosis
	Uræmia	1	Pyelonephritis and renal failure
	Parkinson's disease	1	Coronary thrombosis
	Total	16	
I	Fit or symptomless hypertension	5	2 pulmonary infarcts 1 coronary thrombosis 1 reactionary hæmorrhage 1 uræmia
	Cardiovascular disease ..	9	8 cardiac failures 1 coronary thrombosis
	Uræmia	3	Gross renal disease
	Chronic bronchitis and emphysema	3	2 bronchopneumonias with cardiac failure 1 hæmatemesis from gastric ulcer
	Myeloid leukæmia	1	Hæmorrhage
	Total	21	

compared with 60 in group II. The total volumes of blood given to the two groups were 183 pints to group I and 285 pints to group II.

Magill (1947) suggested that spinal anæsthesia in prostatic surgery increases the likelihood of clot-retention in the immediate postoperative phase. Analgesia of the base of the bladder (due to the spinal anæsthetic) is likely to persist for some time after the operation, and is said to prevent reflex contraction of the bladder musculature in response to irritation by a blood-clot. This was not confirmed in the present series. In fact, postoperative hæmorrhagic complications of all kinds were fewer in patients who had had local and spinal anæsthesia—4 reactionary and 6 secondary hæmorrhages in group I, compared with 7 and 15 respectively in group II.

The prevalence of wound infection and of postoperative chest complications was also studied. There were 22 cases of wound infection in group II and 9 in group I. Thus large volumes of local analgesic and adrenaline did not increase the risk of wound sepsis. Similarly the frequency of chest complications was 16 cases in group II and 13 in group I. However, it is important to note that only 7 of the former compared with 22 of the latter had serious chest disease preoperatively; and several patients operated on under local analgesia had severe cardiac or pulmonary disease or both, thus rendering the giving of a general anæsthetic extremely hazardous.

Table III analyses the deaths in the series. Of the 265 patients who had been regarded fit for their age 16 died after operation. Among these were 5 cases of pulmonary embolism, which remains a serious danger after prostatectomy.

Discussion

The present study shows that the prognosis of prostatectomy is made worse by advancing age and by severely impaired cardiac, renal, or pulmonary function. The mortality-rate is also higher in emergency admissions than in waiting-list cases. Any comparison between different treatments must take these factors into consideration. The review by Lee et al. (1957), which revealed a much higher mortality in non-teaching than in teaching hospitals, can be explained, at least in part, by the greater average age of patients and the higher proportion of emergency admissions in the former group.

The present series is from a teaching centre, but it is the only hospital in the area to which emergencies can be admitted. 75% of our patients were emergencies and 14·7% were over eighty years, compared with 44·3% and 8·8% respectively quoted by Lee et al. as the corresponding teaching-hospital figures. Our overall mortality was 10·7% compared with their 6·5%.

The results of prostatectomy also depend on the skill and enthusiasm of the surgical and nursing team (*Lancet* 1956). In our series approximately equal numbers were operated on under the two types of anæsthesia by each of three surgical firms, so that this real but rather intangible factor has not affected our results.

At first sight it may seem that we are advocating a technique of local and low-spinal analgesia which carries a higher mortality than conventional general anæsthesia. Closer analysis shows, however, that a much higher proportion of poor-risk patients had been submitted to operation using the former method.

We find that symptomless hypertension by itself does not materially affect the prognosis after prostatectomy. On the other hand, severe heart-disease, with or without hypertension, is associated with a marked increase in mortality-rate. This latter observation agrees with those of de Peyster et al. (1952), Lockhead et al. (1954), Morrison (1948), and Hannigan et al. (1951). After suprapubic prostatectomy in particular, Morrison found that in patients with arteriosclerotic cardiac disease the mortality was 39%, compared with 8·1% in fit people; and Burstein (1957) reported a similar difference in prognosis. Thromboembolism and pneumonia, though only slightly more common in arteriosclerotic patients, carry a far higher mortality (Iversen et al. 1953).

Retention of urine in patients with severe cardiac disease is thus a serious condition. One in three die if operated on, and urgent operation should therefore be avoided. A latex self-retaining catheter can be passed under full aseptic precautions and the advice of a physician obtained. In many patients—particularly cases of cardiac failure due to auricular fibrillation—considerable improvement can be expected under medical treatment; and prostatectomy can then be carried out, preferably under the local-and-spinal analgesic technique we have described. In less favourable cases—as in patients with recent severe myocardial infarction—major surgery must be postponed for several months or even indefinitely. They may require suprapubic cystostomy; but we have recently found management by indwelling latex self-retaining catheter satisfactory. This can be changed every fortnight. Infection is certainly no more common than with a suprapubic cystostomy; and, by using a fine catheter, stricture formation has been avoided. Holdswort hand Hardy (1953) have had similar experience with paraplegic patients.

Summary

The technique of local anæsthesia combined with a low spinal anæsthetic for prostatectomy is described. The mortality and morbidity of 170 cases in which this method was used is compared with the results of 170 operations under general anæsthesia.

In both groups, the postoperative mortality was closely related to the general condition of the patient. It was particularly high in patients with severe cardiovascular disease. The management of such patients is discussed.

The local and spinal anæsthesia is particularly suitable for the poor-risk patient. It is associated with less blood-loss at operation, and the risk of reactionary hæmorrhage or clot retention is no greater.

We should like to thank all members of the consultant surgical and anæsthetic staff of the United Oxford Hospitals for much helpful criticism in the preparation of this paper, and for allowing us free access to their case-records. We would also thank the staff of the records department of the United Oxford Hospitals for their help in tracing the notes. Finally, we wish to thank Miss Marjorie Beck for the illustrations.

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TWO SEROLOGICAL TESTS FOR STAPHYLOCOCCAL INFECTION

A. G. TOWERS
M.B., B.Sc. Lond.

ASSISTANT CLINICAL PATHOLOGIST, INSTITUTE OF ORTHOPÆDICS, ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, STANMORE, MIDDLESEX

G. P. GLADSTONE
M.A. Oxon., M.B. Lond.

READER IN BACTERIOLOGY, SIR WILLIAM DUNN SCHOOL OF PATHOLOGY, UNIVERSITY OF OXFORD

DEEP-SEATED staphylococcal infection is not readily diagnosed bacteriologically, since the organisms often multiply in sites from which recovery is difficult—e.g., in spinal lesions. The purpose of this paper is to show that in these cases diagnosis may be greatly helped by serological investigations.

It has been known for many years that the serum of patients with staphylococcal infection may contain antibodies in measurable quantity to a number of antigens of the staphylococcus. Of these, the anti-alpha-hæmolysin has received the most attention. Table I lists the findings of some of the surveys carried out in the past thirty years.

It is seen from this work that the upper limit of the normal value for anti-alpha-hæmolysin is 2 units per ml.; an appreciable number of cases with known staphylococcal infection in bone also fall within this "normal" range. In the present series 67% of 69 cases of osteomyelitis had less than 2 units per ml. on admission. From these results it is clear that no reliance can be placed on the titration of this antibody alone, and an additional serological test is required.

More than twenty years ago Valentine and his coworkers (Panton and Valentine 1932, Valentine 1936, Valentine and Butler 1939, Butler and Valentine 1943) drew attention to the importance of a leucocidin active on human blood-cells, which was produced particularly by staphylococci from severe deep-seated infections. They showed that patients with such lesions generally had high titres of anti-leucocidin in their sera, and this was often not paralleled by an increase in anti-alpha-hæmolysin. This work has been largely neglected, probably owing to technical difficulties in assessing leucocidal action. Recently Gladstone and van Heyningen (1957) have devised a simple method of assay with a crisp end-point. We therefore decided to investigate the content of anti-Panton-Valentine (P.V.) leucocidin in the patients' serum during the course of infection and compare it with that of anti-alpha-hæmolysin to see how far a combination of the two tests could help in diagnosis and in assessing the course of the disease.

TABLE I—SUMMARY OF OBSERVATIONS ON THE CONTENT OF ANTI-ALPHA-HÆMOLYSIN IN HUMAN SERUM

Author	Year	No. included and type of survey	Anti-alpha-hæmolysin (international units per ml. serum)
Murray ..	1935	50 pregnant women	Av. 0·78
		50 newborn babies	,, 0·75
		108 superficial staphylococcal lesions	,, 0·96
		7 osteomyelitis	,, 11.7
Dolman ..	1935	Healthy persons	0·5–1
Blair and Hallman	1935	71 non-staphylococcal infection	Less than 1
		80 osteomyelitis	54 (67%) less than 1; 16 (20%) av. 5·1
Valentine ..	1936	55 healthy persons	99% less than 1
Brzezinski ..	1939	790 healthy Europeans	95% less than 1
Packalen and Berqvist	1947	362 sanatoria patients, mostly tuberculous	Less than 2
Widholm ..	1951	400 healthy persons	All 2 or less
Lack and Wailling	1954	170 non-staph. infection	82% less than 2
Lack	1957	74 acute and chronic osteomyelitis	44% less than 2
		245 non-staph. infection	95% less than 2

Techniques

ASSAY OF ANTI-ALPHA-HÆMOLYSIN

This was carried out at the Royal National Orthopædic Hospital, Stanmore, and the results expressed in international standard units per ml. serum. The details of the test are shown below.

Materials

Serum.—This must be inactivated at 56° C for 30 minutes before use. Sera can then be kept in the refrigerator without any loss of the anti-alpha-hæmolysin, and tested in batches.

Toxin.—This was lyophilised staphylococcal alpha-hæmolysin obtainable from the Wellcome Research Laboratories, Beckenham, Kent. A stock solution containing 20 Lh units per ml. in gelatin-saline solution (normal saline containing 0·1% gelatin) was kept in the refrigerator and diluted with gelatin-saline as required for the test, to give 2 Lh units per ml.

Rabbit cells.—Red cells from fresh citrated blood were washed thrice and diluted to give a 10% suspension.

Method

Twofold dilutions of the patients' serum were made in 0·5 ml. gelatin-saline, starting with tube one containing 0·5 ml. undiluted serum only. 0·5 ml. standard toxin dilution (1 Lh unit) in gelatin-saline solution was then added to all tubes, which were well shaken. Three controls were included, one containing equal volumes of serum and gelatin-saline, the second toxin and gelatin-saline, and the third gelatin-saline alone. The tubes were left at room temperature for 30 minutes. 0·1 ml. 10% rabbit-cell suspension was then added to all tubes, including controls, and the racks of tubes were placed in a 37° C water-bath for 60 minutes.

Results

Hæmolysis should, of course, be complete in the tube containing toxin alone, and no hæmolysis should occur in either of the other two control tubes. The end-point of the titration is that tube in which 50% hæmolysis occurs. Since the titration was carried out at 1 Lh unit level, this tube contains 1 antitoxin unit. The content of antitoxin in the patient's serum can then be expressed in units per ml. With normal sera complete hæmolysis is found in the first tube (0·5 ml. serum) and the sera are therefore reported as having a titre of less than 2 units.

TABLE II—ASSAY OF ANTI-LEUCOCIDIN IN PATIENT'S SERUM

—	Tube										
	1	2	3	4	5	6	7	8	9	10	11
Patient's serum dilution (ml.)	1·0	0·8	0·64	0·50	0·4	0·32	0·25	0·2	0·16	0·13	0·1
Gelatin-saline (ml.)	0	0·2	0·36	0·5	0·6	0·68	0·75	0·8	0·84	0·87	0·9

Equal volumes of each serial dilution added to the same volume of leucocidin dilution containing 0·2, 0·1, or 0·05 L+ per ml. Unitage of serum dilution at end-point:

Test at leucocidin levels*	Tube:	1	2	3	4	5	6	7	8	9	10	11
0·2 L+ per ml.		0·2	0·25	0·31	0·4	0·5	0·75	0·8	1·0	1·25	1·5	2
0·1 L+ per ml.		0·1	0·125	0·16	0·2	0·25	0·38	0·4	0·5	0·63	0·75	1
0·05 L+ per ml.		0·05	0·025	0·08	0·1	0·125	0·19	0·2	0·25	0·32	0·38	0·5

Example: If the end-point is tube 5, at 0·2 L+ level and the original dilution of the patient's serum is $^1/_{10}$, the unitage of the serum = $50 \times 0{\cdot}5 = 25$.

* Strictly speaking, since the leucocidin was diluted in an equal volume of serum, the L+ level used was half that given in the table. However, since the serum was also diluted with the leucocidin, the calculation is unaltered.

TITRATION OF STAPHYLOCOCCAL ANTI-P.V.-LEUCOCIDIN

This was adapted from the method of Gladstone and van Heyningen (1957) for the assay of leucocidin and carried out at the Sir William Dunn School of Pathology, Oxford.

Unitage

Since there is no international unit of anti-P.V.-leucocidin and the original antiserum used by Valentine no longer exists, the arbitrary unit of Gladstone and van Heyningen (1957) was selected as a basis for assay. The late Dr. F. C. O. Valentine informed us that the K unit used in his assays was approximately equivalent to 25 of these units, so that a rough comparison can be made between our work and his.

Materials

Patient's serum.—This was usually the same sample of serum used for the assay of anti-alpha-hæmolysin.

Leucocidin.—A crude concentrate of P.V. leucocidin (free from delta-hæmolysin and other non-specific leucocidal agents) was kindly supplied by Dr. A. M. Woodin. This was standardised to contain 300 L + P.V. leucocidal units per ml. using a preparation of antitoxin (CPP 69) from the Wellcome Research Laboratories containing 25 antileucocidal units per ml. Owing to the remarkable stability of the leucocidal concentrate at 4° C it could be used for 6–8 months without re-standardisation. It was diluted with gelatin-saline just before use to give 0·2, 0·1, or 0·05 L+ per ml. according to the L+ level used for the test (see below).

Human polymorph. leucocytes.—These were obtained from a single individual by allowing blood to clot on a grease-free coverslip and incubating it in a moist chamber at 37° C for 20 minutes. The clot and any free red blood-cells were then washed off with gelatin-saline solution, leaving the leucocytes adherent to the glass. The coverglass-leucocyte preparations were kept in gelatin-saline solution until required for use (not longer than 2 hours).

Method

If the titre of anti-leucocidin in the patient's serum was quite unknown, the serum was diluted 1/10 and a preliminary titration was made at 50% differences over a hundredfold range. A more accurate assay was then carried out as follows: the patient's serum was diluted in gelatin-saline to contain approximately 0·5, 0·25, or 0·125 units per ml. according to whether the L+ level of leucocidin selected in the test was 0·2, 0·1, or 0·05 per ml. (usually the assay was carried out at 0·2 L+ level, the lower values being sometimes used to conserve leucocidin or to estimate very low values of anti-leucocidin). Further serial dilutions at 20% differences over a tenfold range were then made as in table II.

A constant arbitrary volume (about 0·1 ml.) of each dilution was transferred to waxed welled tiles by means of small capillary tubes attached to a spring-loaded automatic delivery pipette. With a fresh capillary tube in position and the same setting of the pipette, the same volume of leucocidin dilution containing a known L+ level (usually 0·2 L+ per ml.) was then added. The tile was gently shaken to allow thorough mixing and the mixtures were allowed to stand at room temperature for 15 minutes. A constant arbitrary volume (about 0·02 ml.) of each mixture was then placed on grease-free slides with the automatic pipette and covered with the coverslips containing adherent leucocytes. (The coverslips before application were blotted to remove as much moisture as possible without drying the preparation.) With the cover slips in place, fluid was removed by gentle blotting with filterpaper and the preparation sealed with paraffin wax. Dried salt on the surface of the coverslips was removed with wet filterpaper. The preparations were incubated at 37° C for $^1/_4$ hour and examined under light phase contrast.

Results

The end-point was that preparation containing the highest concentration of serum showing the morphological changes in the leucocytes described by Gladstone and van Heyningen (1957) as evidence of the action of leucocidin. The unitage of the serum was obtained by multiplying the original dilution of the serum by the figure in table II giving the unitage at the end-point at a given L+ level.

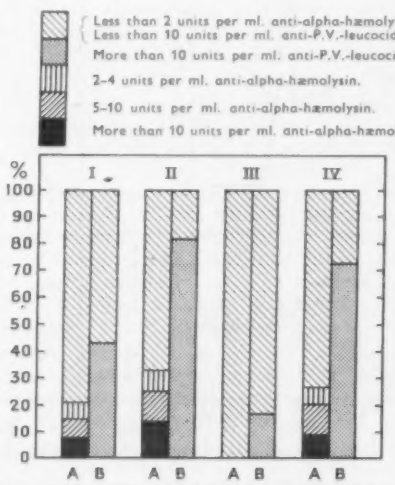


Fig. 1—Comparison between the proportion of cases showing on admission raised serum titres of anti-alpha-hæmolysin (greater than 2 units per ml.) and anti-P.V.-leucocidin (greater than 10 units per ml.).

I, All cases. II, Staphylococcal infections. III, Non-staphylococcal infections. IV, Staphylococcal osteomyelitis.

A, anti-alpha-hæmolysin. B, anti-P.V.-leucocidin.

WHITE BLOOD-CELL COUNT

Total and differential white blood-cell counts were carried out on each patient on admission and at intervals thereafter. It is not uncommon for the total count to be below 10,000 per c.mm. with a normal differential count during established staphylococcal infection.

NORMAL LEVELS OF ANTIBODY IN HUMAN SERUM

Anti-alpha Hæmolysin

This is reported as less than 2 units per ml. using the method given.

Anti-P.V.-leucocidin

Valentine (1936) showed that the titre of anti-leucocidin in normal sera was more variable than that of anti-alpha-hæmolysin. Of 55 sera examined, 85% had less than 2 units per ml. (adjusted in terms of unitage used in this paper) and the remainder less than 10. We have accordingly taken 10 units per ml. as the upper limit of the normal value, but it is possible that this value is too high and may indicate a recent staphylococcal infection.

Scope of the investigation

156 patients have kindly donated sera which have been used in this investigation over the past two years. They fall into the following groups:

Staphylococcal infections	83	Osteomyelitis 69*
		Tuberculous sinuses secondarily infected with staphylococci 6
		Other 8
Other infections	73	Bone and joint tuberculosis 22
		Miscellaneous 51

* This group includes 23 sera examined from outside hospitals, mostly single determinations sent from acute orthopædic cases.

The serum from each patient, as far as was possible, was examined in the first week after admission and thereafter at fortnightly or monthly intervals.

Results

Figs. 1 and 2 show the distribution of anti-alpha-hæmolysin and anti-P.V.-leucocidin respectively in the serum of patients on admission. In the non-staphylococcal cases it is clear that, whereas the anti-alpha-hæmolysin titre of all sera was within normal limits, that of anti-P.V.-leucocidin was above normal in 17% of the cases (fig. 2). On the other hand, among the staphylococcal infections, only 33% of sera showed titres of anti-alpha-hæmolysin above normal, in contrast to 82% showing titres of anti-P.V.-leucocidin above normal (fig. 1). The anti-P.V.-leucocidin titration would appear to be particularly useful in those cases of staphylococcal infection in which the anti-alpha-hæmolysin is normal (73% of cases) and persists at a normal level during the course of infection (67%). In 25% of these cases no material was available for bacteriological examination; so estimation of anti-P.V.-leucocidin may be a real help in establishing the diagnosis, particularly when titres two or more times the normal limit are obtained.

The changes in titre of anti-alpha-hæmolysin and anti-P.V.-leucocidin during the course of infection are shown in 6 representative cases (figs. 3–8).

Case-reports

Case 1.—An 11-year-old boy was admitted to hospital with painful right hip and a history of 3 days' nausea and vomiting. Temperature 101°F, white blood-cells 6200 per c.mm. (neutrophils 75%), erythrocyte-sedimentation rate (E.S.R., Westergren) 80 mm. in the first hour. He was treated with penicillin and salicylates, but low-grade pyrexia continued for a month. He was transferred to the Royal National Orthopædic Hospital with ? tuberculous hip. His E.S.R. had risen to 107 mm. in the first hour; white blood-cells 7900 per c.mm. (neutrophils 64%). The anti-alpha-hæmolysin titre was less than 2 units per ml., and the anti-leucocidin 80 units per ml. The hip-joint was explored and 50 ml. pus evacuated from which *Staph. pyogenes* was recovered after 48 hours' incubation. Treatment: 6 weeks' course of penicillin and tetracycline.

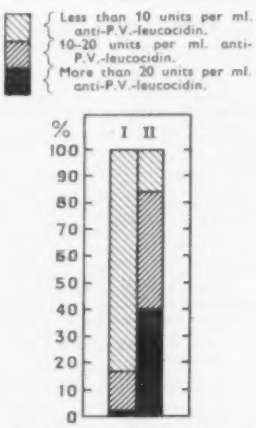
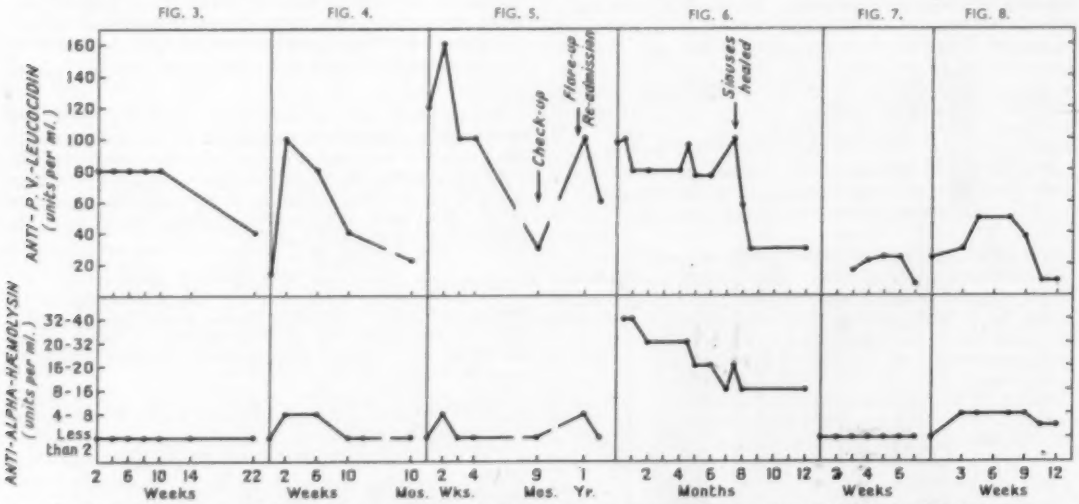


Fig. 2—Proportion of cases with a normal anti-alpha-hæmolysin serum level and a raised titre of anti-P.V.-leucocidin.

I, Non-staphylococcal infections. II, Staphylococcal infections.

Case 2.—A 12-year-old boy with acute osteomyelitis 3–4 weeks after an injury. A subperiosteal abscess at the lower end of the right femur was drained, from which a profuse growth of penicillin-sensitive *Staph. pyogenes* was obtained. On admission: white blood-cells 15,500 per c.mm. (neutrophils 85%), anti-alpha-hæmolysin less than 2 units per ml., anti-leucocidin 8 units per ml.

Case 3.—A 16-year-old boy with acute osteomyelitis followed by pyæmic abscesses of hand, shoulder, and lung. He was transferred to the Royal National Orthopædic Hospital 5 months later with chronic discharging sinuses over



Figs. 3–8—Serum titres of anti-alpha-hæmolysin and anti-P.V.-leucocidin during the course of infection in cases 1–6 (see text).

Fig. 3.—Case 1: acute osteomyelitis. *Staph. pyogenes* isolated. White blood-cells on admission 7400 per c.mm. (neutrophils 64%).

Fig. 4.—Case 2: acute osteomyelitis. *Staph. pyogenes* isolated. White blood-cells on admission 15,500 per c.mm. (neutrophils 85%).

Fig. 5.—Case 3: chronic osteomyelitis with two acute attacks. White blood-cells on admission 8100 per c.mm. (neutrophils 51%). White blood-cells on readmission 8000 per c.mm. (neutrophils 59%).

Fig. 6.—Case 4: chronic osteomyelitis in a patient admitted 5 months after original injury. *Staph. pyogenes* isolated. White blood-cells on admission 10,200 per c.mm.

Fig. 7.—Case 5: chronic osteomyelitis. No material available for culture. White blood-cells on admission 6300 per c.mm. (neutrophils 71%).

Fig. 8.—Case 6: osteomyelitis of spine. No material available for culture. White blood-cells on admission 14,800 per c.mm. (neutrophils 80%).

femur. On admission: white blood-cells 8100 per c.mm. (neutrophils 51%), E.S.R. 48 mm. in the first hour. He has had operative treatment and multiple chemotherapy. A recent flare-up was treated by drainage of abscess and a course of penicillin plus streptomycin followed by chloramphenicol, which resulted in a good clinical recovery.

Case 4.—A 53-year-old man with chronic osteomyelitis following an accident involving dislocation of both hips. He was admitted to the Royal National Orthopædic Hospital 5 months after his injury; white blood-cells 10,200 per c.mm. (neutrophils 90%), E.S.R. 87 in the first hour, anti-alpha-hæmolysin 20 units per ml., anti-leucocidin 100 units per ml. *Staph. pyogenes* and *Proteus* sp. were recovered from the wound swabs. All sinuses healed after a further 8 months' operative and chemotherapeutic treatment.

Case 5.—A 53-year-old man with chronic osteomyelitis following fracture and pinning of neck of femur. Flare-up 3 years later, with pain and tenderness over right hip. On admission: white blood-cells 6300 per c.mm. (neutrophils 71%), E.S.R. 37 mm. in the first hour, anti-alpha-hæmolysin less than 2 units per ml., anti-leucocidin 15 units per ml.

Case 6.—A man of 48 was admitted with pain and tenderness over lower spine. White blood-cells 14,800 per c.mm. (neutrophils 80%), anti-alpha-hæmolysin less than 2 units per ml., anti-leucocidin 25 units per ml. No material available for culture. Treatment: 6 weeks' course of penicillin.

Comment

The titres of both anti-alpha-hæmolysin and anti-P.V.-leucocidin show distinct fluctuations. In acute osteomyelitis (cases 1 and 2), or flare-up of infection in chronic cases (cases 3 and 5), the anti-P.V.-leucocidin titre varies to a greater extent than the anti-alpha-hæmolysin titre, whereas in infection that has persisted for some months (case 4) the anti-alpha-hæmolysin persists at a high level. The 2 osteomyelitis cases (5 and 6)—1 of hip and 1 of spine—were both regarded as staphylococcal although no material was available for examination. They showed good clinical response to antistaphylococcal antibiotic therapy.

Conclusions

It is clear from these results that, in the series investigated, a rise in titre of both anti-alpha-hæmolysin and anti-P.V.-leucocidin is indicative of recent staphylococcal infection or reinfection. If the antibody levels are traced throughout the course of infection, the overall trend of both follows a parallel course, although there are pronounced fluctuations. However, if the levels of antibody given in this paper as normal are accepted, either test alone may lead to error. Estimations of anti-alpha-hæmolysin gave false negative results in some two-thirds of the cases examined. On the other hand, estimations of anti-P.V.-leucocidin seldom gave a negative result in proved staphylococcal infection, but gave false positive results in some 17% of non-staphylococcal infections. The two tests may therefore be considered complementary, and both should be used.

The false positive values of anti-P.V.-leucocidin in non-staphylococcal infection may possibly be explained by a recent antigenic stimulus from some unrecognised staphylococcal infection. Most human sera have low titres of anti-P.V.-leucocidin, showing that most individuals have developed a potential immunity to the antigen at some time during their life—possibly as the result of nasal carriage. A small unrecognised infection might be sufficient to produce a secondary response, with the result that relatively high titres of antibody might be found in the serum. Alternatively, a non-specific stimulus might result from non-staphylococcal infections (anamnestic reaction).

Packalen and Berkqvist (1947) showed that an increase in staphylococci in nasal and throat flora could provoke a rise in anti-alpha levels in patients showing no evidence of infection. This is of interest in the light of the report by Adamson (1949) that patients with tuberculosis were often found post mortem to have staphylococci in the regional lymph-glands and upper respiratory tract. The implication of Packalen's work is that the staphylococci of the upper respiratory tract may actually be invasive; if they reach the regional lymph-glands they may, presumably, enter tuberculous abscesses from within.

The absence of a raised anti-alpha-hæmolysin level in proved staphylococcal infection is more difficult to explain. Rogers (1954, 1956) has suggested as a possible explanation that "macroanions" of the body tissue, such as chondroitin sulphate and hyaluronic and nucleic acids, interfere with the production of alpha-hæmolysin by the infecting staphylococcus. In pathological conditions, naturally occurring macroanions and/or free nucleic acids in pus may accumulate in the vicinity of the infecting organism. In support of this Bergman (1957) has reported that sodium nucleate inhibits the production of alpha-hæmolysin. The work of Medvedev (1957) suggests another possibility. He found that in certain staphylococcal infections varying amounts of staphylococcal antigen were excreted in different individuals. Alpha-hæmolysin was not specifically tested for, but he noted in some cases an inverse relationship between the amount of antigen excreted and the titre of anti-alpha-hæmolysin in the patient's sera; alpha-hæmolysin may be excreted before it has a chance to stimulate the production of antitoxin.

Summary

The anti-alpha-hæmolysin and anti-P.V.-leucocidin titres have been followed in patients with staphylococcal osteomyelitis and non-staphylococcal infections. A rise in titre of anti-alpha-hæmolysin was found in only 33% of cases, whereas the titre of anti-P.V.-leucocidin was raised in 82% of cases.

On the other hand, of non-staphylococcal infections 17% were associated with an increased level of anti-P.V.-leucocidin, and none with an increased level of anti-alpha-hæmolysin.

A combination of the two tests is of diagnostic value, particularly in deep-seated infection from which no organisms have been isolated.

We wish to thank Dr. C. H. Lack for his interest and help; the Medical Research Council for a supply of standard anti-alpha-hæmolysin; Miss Mollie Barr and Mrs. Irene Batty, of the Wellcome Research Laboratories, for a supply of anti-leucocidin; Dr. A. M. Woodin for a supply of leucocidin concentrate; and Mrs. A. Parrish, Miss J. Tyrrell, and Mr. R. J. Smith for much valuable technical assistance.

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EFFECT OF HYPOTHERMIA ON THE ADRENOCORTICAL RESPONSE TO OPERATION

IAN W. MACPHEE
M.D. Glasg., M.Sc. Lpool, F.R.C.S.E., F.R.C.S.
SENIOR LECTURER IN SURGERY

T. CECIL GRAY
M.D. Lpool, D.A., F.F.A. R.C.S.
READER IN ANÆSTHESIA

SHEILA DAVIES
B.Sc., Ph.D. Lpool
RESEARCH FELLOW IN SURGERY

UNIVERSITY OF LIVERPOOL

"ARTIFICIAL hibernation" as an adjunct to anæsthesia was introduced by Labourit and Huguenard (Huguenard 1953). They gave a "lytic cocktail" of chlorpromazine 50 mg., pethidine 100 mg., and promethazine 50 mg. to produce basal narcosis and "neurovegetative disconnection". Mild hypothermia (32°–34° C) was encouraged by removal of all coverings, ventilation, and, occasionally, the application of ice. They believed this method would produce a state in which the organism did not react to operative trauma. In particular cell energy expenditure and the body reaction to injury would be reduced, thereby conserving the reactive state and the "alarm reaction" for the convalescent phase which was to follow. In short it was believed that artificial hibernation, especially in association with the use of chlorpromazine, would protect the organism from surgical trauma and surgical shock.

Induced hypothermia associated with the use of chlorpromazine was first used in Liverpool by Gray and Dundee, and in a pilot study, the method was used in major general surgery for poor-risk patients (Dundee et al. 1953a, 1953b). The impression was gained that this rather elaborate method of anæsthesia was of value, although certain contraindications soon became apparent. It was readily appreciated, also, that success in any major operation on a poor-risk patient can scarcely be compared with a similar operation in an apparently comparable patient. The variables are too diverse, and the response of the individual to his environment, his disease, the operation, and the anæsthetic is the sum of factors beyond clinical assessment. Since these early investigations, it has become clear that artificial hypothermia is of undoubted value in neurosurgery and cardiovascular surgery. The reduction in blood-flow, the reduced cardiac output, and particularly the reduced oxygen requirements of the tissues are of obvious value. Our initial problem, however, was unsolved—namely, could induced hypothermia lead to safer surgery, or alternatively could the method of hypothermia extend the limits of surgery to patients previously considered too ill for operation? This simple question conceals a host of relevant factors. We believe that safe yet radical surgery, associated with skilled anæsthesia and sagacious pre- and post-operative care represents the limit of attainment. Could the methods of artificial hibernation, by making the organism insensitive to trauma, extend these limits?

It is not only the magnitude of trauma, but the reaction or the response of the individual to the trauma or disease which represents the important factor in recovery. The evaluation and indeed even the measurement of such a response is as yet entirely beyond our understanding, but an index of this response may be adduced from the response of the adrenal cortex to trauma or operation (Selye 1950). Moore and Ball (1952) and MacPhee (1953) have shown that a series of metabolic reactions are set in motion as a result of operation, and that these reactions are due chiefly to an increased secretion of adrenocortical steroids. The first nine patients we treated by surgery in the hypothermic state were investigated in this way, and it was found that the serum and urinary electrolyte changes were similar to those encountered after operation without induced hypothermia. The combined incidents of hypothermia, anæsthesia, operation, and recovery took place within a maximum period of 5 hours, whereas the metabolic observations were based on the reactions measured in 24-hour periods. It was possible, therefore, that patients recovering from hypothermia and operation had a sufficient opportunity during the remainder of the 24-hour period to show the expected response to injury. Indeed, the adrenocortical response to operation frequently extends over a period of at least 3 days. It seemed necessary, therefore, to separate the recovery from operation and the recovery from hypothermia by such an interval, before the general metabolic effects of the two incidents (i.e., operation and hypothermia) could be separately evaluated.

It was decided, therefore, that experiments would have to be carried out in animals. They would require so to be designed that a period of 72 hours would elapse after operation, during which the animals would still be maintained in a hypothermic state, and that the adrenocortical response to injury must be evaluated during this phase, as well as in the phases before and after recovery from hypothermia. In addition, because the serum concentration of cortical steroid varies from hour to hour, we have rejected (as is a common practice) this measurement for prolonged investigations, and have estimated the urinary excretion of steroid fractions, assuming them to be a reflection of cortical steroid production. The method of urinary cortical steroid measurement used has been that described by Norymberski et al. (1953, 1954), a method which has been generally recognised to be satisfactory. This method depends on the conversion of all 17-hydroxysteroids to 17-ketosteroids, and their simple estimation by colorimetric methods. Most, though not all, cortical steroids, conjugated or free, are estimated by this method.

A highly artificial train of circumstances has been created in these experiments, but our early clinical experience and our initial pilot experiments have shown that this long-sustained hypothermic phase must necessarily follow the injury or operation, if the effects of both are to be separately studied.

We must also defend the use of cortical steroid production or excretion as an index of trauma. It is quite possible that there are better methods of evaluating the severity of injury, but no experiment which solely measures the degree or the extent of injury could satisfy our requirements. The variable reaction of different members of the same species to comparable injuries depends more on the individual response of the organisms than on the extent or diversity of the injury. It is the magnitude of such a response to a relatively standardised injury which we discuss here.

Method

We had already established that urinary cortical steroid excretion rose in man following operation. Similar studies of urinary steroid excretion in the dog before and after the standard trauma described below confirmed that

injury in the dog is also associated with an increased steroid excretion. In these, and in the subsequent experiments, only male dogs were used.

Thereafter, an initial pilot experiment was carried out to study the changes during a prolonged phase of hypothermia after standard operative trauma.

The dogs were anæsthetised with intraperitoneal pentobarbitone (30 mg. per kg.). Hypothermia was then induced by surface cooling, using a water blanket and ice bags. During the next 72 hours, the rectal temperature was maintained between 26° and 29° C. Shivering was prevented, and anæsthesia continued during this period with doses of pentobarbitone or levallorphan, which has been found most useful in view of its long action (Sedzimir and Dundee 1958). The animal shivered from time to time and this was regarded as an urgent indication for further sedation. An endotracheal tube was passed as a routine.

When the rectal temperature fell below 30°C, the abdomen was opened with the usual aseptic precautions, and a standard manipulation was carried out on the small bowel. This consisted of the gentle massage of a six-inch loop of ileum five times. The bladder was emptied, and a fine polythene catheter was then passed through the urethra and tied in place. The abdomen was closed. 24-hour urine samples were collected by means of the indwelling catheter.

During the 72-hour period of the experiment, the pulse-rate, temperature, and respiratory-rate were recorded every 30 minutes. At these intervals the animal was turned, and secretions aspirated from the respiratory passages. An intravenous infusion was set up at the outset, and water and electrolyte requirements were replaced with normal saline, 5% dextrose, M/6 sodium lactate solution, or 'Dextravan' as required. Blood samples were collected once or twice daily, and the carbon-dioxide combining-power, and the serum sodium and potassium estimated. Water and electrolyte requirements were then adjusted accordingly. Penicillin (0·5 million units) was injected daily. The temperature of the animal was kept constant by the application of ice bags or warmth.

In the pilot experiments, the animals were sacrificed at the end of the 72-hour period, and both suprarenals, and specimens of kidneys and liver were taken for histological examination. Five dogs were treated in this way.

Following these experiments, the observations were repeated in another group of dogs, but the experiment was extended both before and after the phase of hypothermia to study the urinary cortical steroid excretion in the pre- and post-hypothermic stage.

These animals were confined in metabolic cages, supplied with food and water ad lib, and the total 24-hour urine excretion collected during 3 or 4 days before the experiment. Thereafter they were subjected to the experiment described above. At the end of the experiment, these animals were slowly warmed and finally replaced in their metabolic cages. 24-hour urine samples continued to be collected.

Twelve dogs were treated in this way. Two died early in the experiments with suspected distemper, and another five did not live sufficiently long after the end of hibernation to give a satisfactory urinary output. Only five dogs survived beyond the first complete 24-hour period after warming began again, and only four dogs survived beyond the second 24-hour period. It is these five dogs which form the subject of the results in this phase of the experiment. None of these animals regained full consciousness after the experiment, though it proved possible to rewarm them to or even above normal body-temperature.

To establish the limits of the normal resting corticosteroid excretion in the dog, thirty estimations of separate 24-hour urine specimens were made. To these normal values and the control studies during hibernation, and also the operative controls with a short period of anæsthesia and without hypothermia, it was decided to add a further control by preoperative studies, then anæsthetising the dogs, carrying out the standard operation, and maintaining anæsthesia but not hypothermia for the succeeding 72 hours, before permitting the animals to recover. Four animals were treated in this way. Long-sustained anæsthesia of this kind for 3 days and 3 nights promotes a fall in body-temperature. At no stage, however, in the four dogs did the temperature fall below 31·8°C, and for most of the time was considerably above this.

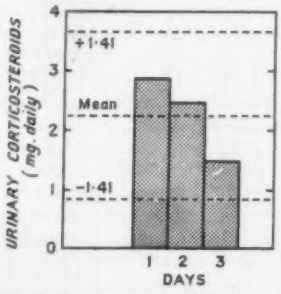

Fig. 1—Mean normal and daily excretion of corticosteroid during hypothermia, expressed as mg. equivalents androsterone.

Results

Urinary Cortical Steroid Excretion

The mean of thirty preoperative excretions of cortical steroid was 2·34 mg. (S.D. ±1·41). In the five dogs studied solely during hypothermia, the mean daily urinary cortical steroid excretion for the three 24-hour periods is shown in fig. 1. These results lie within the scatter of the normal preoperative excretions, as is the case in the five subsequent dogs studied throughout the more prolonged period. The mean daily excretions for these animals are shown in fig. 2, and it can be seen that the cortical excretion during anæsthesia and hypothermia is very much the same as during the preoperative resting period. When the animal is allowed to recover from hypothermia, however, and as the body-temperature slowly approaches normal, an enormous excretion of corticoid results. In the first 24-hour period, the mean excretion in five dogs was 6·9 mg. (S.D. ±2·25), and in the second 24-hour period, the mean excretion for four dogs was 13·6 mg. (S.D. ±7·2). When compared with all other excretion-rates studied during different phases of these experiments the results are found to be statistically significant at the 1 in 1000 level ($P < 0.001$). Indeed, this relatively enormous excretion of corticosteroid was only found in other circumstances in one dog, which will be discussed later.

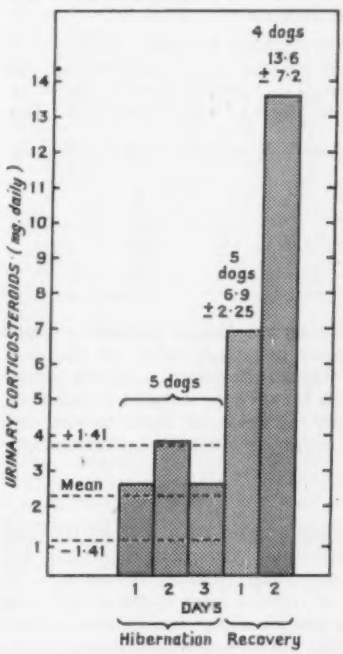

Fig. 2—Mean normal daily excretion of corticosteroid during hypothermia, and after recovery from hypothermia, expressed as mg. equivalents androsterone.

The mean results in three of the four dogs used as controls and subjected to a 3-day period of anæsthesia after injury and with-

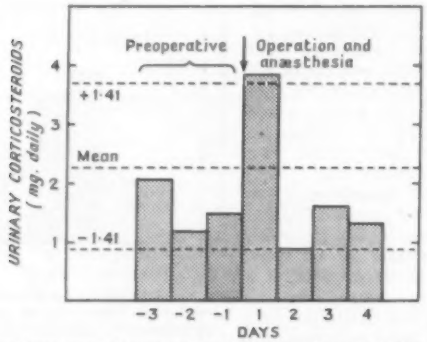

Fig. 3—Mean normal preoperative daily excretion of corticosteroid during continued anæsthesia only, and after recovery from anæsthesia expressed as mg. equivalents androsterone.

out hypothermia are shown in fig. 3. The immediate postoperative rise lies just beyond the standard deviation of the mean normal limit, and certainly above their preoperative levels. Thereafter the excretion-rate falls and remains, even after recovery from anæsthesia, within the normal range. These three animals recovered from the experiment, and appeared perfectly normal thereafter.

We have excluded from these controls one dog. This dog shows a very considerable rise in corticosteroid excretion in the 2 days after recovery from anæsthesia. During this time, the animal did not appear normal, and it died on the third day. Unfortunately a postmortem examination was not carried out, but it was suspected to be suffering from distemper. For this reason, the results were not embodied in the mean results for the group, as it is believed that they do not represent the normal pattern of reaction.

Serum and Urinary Electrolytes

It proved difficult to maintain a normal alkali reserve in the dogs subjected to long periods of cooling. An acidæmia developed in all such animals, partly respiratory in origin but also partly due to a loss of fixed base. The

TABLE I—CO_2-COMBINING POWER, O_2 SATURATION, AND FLUID BALANCE

Days of hypothermia	1	2	3
CO_2-comb. power (vols. %) ..	51·89	39·37	35·45
O_2 saturation (vols. %)	13·31	16·03	10·25
Fluid intake (ml.)	1522	1000	2000
Urinary output (ml.)	390	1065	538

typical changes in the carbon-dioxide combining power of the plasma are shown in table I during the period of hypothermia in one animal. In general also, the serum-sodium tended to fall, the serum-potassium to fluctuate, and the total urinary excretion of both sodium and potassium was high in spite of the apparent extracellular sodium deficiency.

Water Balance

All the cooled animals became œdematous by the third day (unlike the animals under anæsthesia for 3 days) and their water balance became difficult to control. In addition to interstitial œdema, most of the cooled dogs had a peritoneal and many had a pleural effusion. These changes may have been due to increased capillary permeability, although the few records we have did not reveal any considerable decrease in the oxygen saturation of the blood. Whether or not there was adequate oxygen utilisation at these temperatures is not, however, clear and certainly the blood-flow appeared to be much reduced. In spite of œdema, the urinary output tended to fall over the 3-day period, and on the third day, when the œdema was most marked the urinary output was usually lowest. Typical results of fluid intake and output are shown in table I.

Respiration and Heart-rate

The changes in the cardiac and respiratory-rate during hypothermia are illustrated in fig. 4. The rise in respiratory rate later in these experiments was usually associated with a reduced vital capacity due to pulmonary collapse, œdema, or consolidation.

Changes in Blood Coagulation

In our earlier experience we sometimes found the clotting-time in man prolonged during hypothermia. In our studies

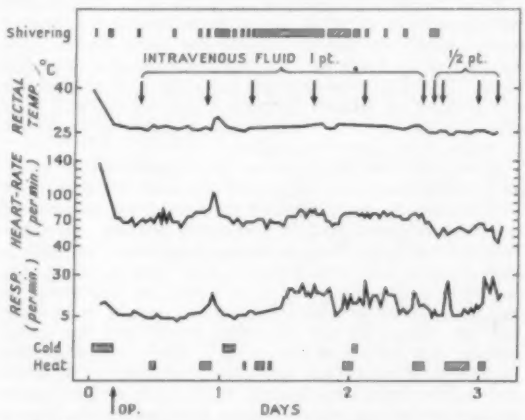

Fig. 4—Pulse-rate, respiratory rate, rectal temperature, and drugs administered during 72 hours' hypothermia.

in four hypothermic dogs, two showed a considerable prolongation in clotting-time associated with a considerable fall in plasma-prothrombin and in the platelet-count, whereas in the other two dogs little significant change was found. In four dogs maintained under anæsthesia only for 3 days, no significant change was found in clotting factors. Typical results are shown in table II.

Histological Changes in Tissues

In most animals which died or were killed after the experiments, postmortem examinations were carried out as soon as possible. Excluding the signs of lung infection, and excluding animals which were in a poor physical state before death, few changes were seen in the cooled animals apart from effusions into serous cavities and punctate hæmorrhages. The kidneys showed at most a little focal nephritis, the adrenals were normal, and the liver showed a centrilobular fatty infiltration. This could well have been due to starvation, although it is known that chlorpromazine may damage the liver. In any case, the liver changes were never severe.

TABLE II—BLOOD-COAGULATION FACTORS IN DOG A (ANÆSTHETISED AND HYPOTHERMIC) AND DOG B (ANÆSTHETISED ONLY)

Days	1		2		3	
	A	B	A	B	A	B
Platelets ..	361,000	187,000	206,000	170,000	290,000	112,000
Clotting-time (37° C) ..	3' 30"	3' 00"	3' 00"	3' 30"	3' 30"	5' 00"
Thrombin fibrinogen (%)	100	100	91	176·7	115	198·4
Prothrombin index (%)	106	97·6	120	108·1	96	102·6
Fibrinogen (g. per 100 ml.)	0·5	0·76	0·45	0·54	0·39	0·82

In a few animals, however, which died during the course of prolonged hypothermia, histological evidence of damage was seen in the liver, kidneys, and suprarenals. The severity of these changes appeared to depend on the animal's state before death, and may have been related to hypoxia due to more extensive pulmonary œdema and subsequent pneumonia. These changes have been reported previously (Gray 1957) and were considered at that time to be a possible result of prolonged hypothermia. Our subsequent findings, however, have caused serious doubt about this.

Discussion

The results show conclusively that the addition of long-sustained hypothermia to anæsthesia and operation greatly increases urinary corticoid excretion. We believe that the increased steroid excretion represents an increased steroid production, and that this is associated with the recovery from hypothermia. If it be accepted that this increased production of steroid represents one aspect of the body's response to trauma, we think these experiments show that hypothermia as an adjunct to anæsthesia and operation may make increased and not diminished demands on the suprarenal reserves. It may be true that extensive surgery can be carried out under hypothermia which would not be possible without it (and sometimes this has been our clinical impression), but there seems little doubt that, at the temperature ranges we have studied, the *recovery* from hypothermia increases three or four times the work done by the suprarenal cortices. It is true that the reactions we have studied are at comparatively low temperatures. The changes associated with temperatures above 30°C are, however, very much less extensive, but the use of such temperature levels may offer very little of value to the general surgeon. On the other hand, temperatures below 26°C are rarely of practical value, since serious cardiac arrhythmias may develop.

The alternative suggestion to account for the greatly increased excretion of steroid on recovery from hypothermia is that the steroid may have accumulated during hypothermia but was not excreted in the urine until after recovery. The clearance of other solutes during hypothermia, however, appeared fairly normal, the urinary output during hypothermia was sustained, and the urinary output on recovery from hypothermia was usually decreased. In addition, the maximal excretion of steroid always took place on the second and not the first 24-hour period after recovery from hypothermia. For these reasons, we believe there was no interference with the urinary excretion of steroid during hypothermia, and that the increased secretion after recovery was associated with an increased production at that time.

We have not found the histological examination of the suprarenal cortex to be of value in the assessment of antecedent adrenal function, and we could find no correlation between cellular appearance and the magnitude of the suprarenal response. The storage reserve of the cortex depends on too many factors which have preceded the experiments to permit of a correlation between cell morphology and glandular function.

We have been particularly interested in and puzzled by the fact that none of these animals recovered consciousness after prolonged hypothermia. In sustained hypothermia in man for very much longer periods it has been our experience that recovery is the rule and that no adverse effects of hypothermia have been observed. In these patients, however, the temperature has not been reduced below 30°C, and it is possible that the more profound hypothermia in the experimental animals mitigates against recovery. We have also found it very much more difficult to prevent profuse bronchial secretions, pulmonary atelectasis, and pneumonia in these animals than in man. The reasons for this we have not discovered.

The alteration in blood-coagulation factors was found to be highly significant in only two of the four dogs. We have been unable to correlate these changes with other factors which may have gone unobserved in our experiments.

The most interesting fact we have observed is that hypothermia induced by the method described does not significantly depress the production or excretion of cortical steroid. In most instances the excretion remained within normal resting limits. What hypothermia appears to have done is to block the immediate demands made upon the adrenal cortex in response to operative trauma. There was therefore no depression of cortical function, but a depression of the response to injury. Our experiments were not designed to demonstrate the value of such a depression. They do, however, show that hypothermia insulates the cortex from the demands made *only* during trauma and certainly not during the recovery phase. The value of hypothermia in the protection from surgical shock has therefore not been proven.

Conclusions

The results of these artificial experiments show that:

(1) Induced hypothermia in the range 26–30°C does not significantly depress the production or excretion of cortical steroid.

(2) Recovery from prolonged hypothermia after operation is associated with an increased excretion of cortical steroids which is greater than after operation alone.

(3) Prolonged hypothermia maintained after injury or operation depresses the normal postoperative rise in cortical steroid excretion.

These experiments would have been quite impossible without the help of many of our colleagues and technical staff of the departments of surgery and anæsthesia, and to them we extend our sincere appreciation.

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"... Young psychology has an ambition—the ambition to be regarded as a science. As a consequence, psychology not only imitates the positive virtues of the sciences, particularly their methods—which it does with considerable success; it also takes over their aversions. Among these, a dislike of merely subjective influences in observation and in thought is most conspicuous; and since value appears to the scientist as a most disturbing influence of this kind, he never uses the concept in his description of nature. According to him, nature consists of strictly neutral facts, and values (which are not, of course, neutral facts) occur only in human minds. As the psychologist sees it, this means that, science being an admirable enterprise, he must also keep away from value. . . . Can it be denied that here a powerful negative valuation, which accompanies the strong positive value attributed to science, prevents the study of value? And yet, few seem to realise that, in this fashion, precisely the human factor which is to be excluded from the psychologists' investigations causes this curious exclusion. One cannot even attack value without being made to do so by a value. Could there be a better demonstration of the omnipresence of value in human affairs?"—Dr. WOLFGANG KÖHLER in a Gifford lecture, *Scotsman*, Oct. 10.

ABSORPTION OF VITAMIN B_{12} IN PERNICIOUS ANÆMIA *

DEFECTIVE ABSORPTION INDUCED BY PROLONGED ORAL TREATMENT

MICHAEL SCHWARTZ
M.D. Copenhagen
PHYSICIAN AND LECTURER

PER LOUS
M.D. Copenhagen
DIRECTOR, DEPARTMENT OF CLINICAL BIOCHEMISTRY

EINAR MEULENGRACHT
M.D. Copenhagen
EMERITUS PROFESSOR OF CLINICAL MEDICINE

BISPEBJERG HOSPITAL, COPENHAGEN

ORAL treatment of pernicious anæmia with relatively unpurified preparations of hog stomach (particularly from the pyloric segment) can maintain unlimited remission in almost all cases; and yet the new oral preparations ('Bendogen', 'Bifakton', 'Cycoplex') of vitamin B_{12} and purified hog pyloric mucosa have proved unsuccessful in several cases during prolonged treatment (Blackburn et al. 1955, Meulengracht 1955, Nørregaard 1955, Bastrup-Madsen 1957, Schwartz et al. 1957a).

TABLE I—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (% OF ORAL DOSE) IN UNTREATED PERNICIOUS-ANÆMIA PATIENTS, WITHOUT AND WITH INTRINSIC FACTOR

Case no.	Intrinsic factor	
	None	Hog pyloric mucosa 100 mg.
1	1·2	12·4
2	1·5	12·3
3	4·4	13·1
4	3·8	14·4
5	2·0	15·6
6	2·6	16·0
7	3·9	16·1
8	0·1	17·1
9	2·2	19·0
10	2·7	19·3
11	0·7	22·4
12	1·3	24·0
13	1·2	24·3
14	1·3	25·6
15	2·0	26·3
16	3·6	26·8
17	3·7	29·5
Average	2·2	19·7

In investigating the absorption of vitamin B_{12} with hog pyloric mucosa as intrinsic factor it was found that this absorption was more or less blocked in some patients treated with oral preparations, whereas vitamin-B_{12} absorption was normal using homologous intrinsic factor (Schwartz et al. 1957a).

This blockage of the vitamin-B_{12} absorption induced by therapy has now been described by several workers (Berlin et al. 1957, Lowenstein et al. 1957, Adams 1958, Allgén and Tomenius 1958, Killander 1958b, Stokes and Pitney 1958), and must be presumed to be the explanation of the failure of these preparations in long-continued treatment.

In defective absorption, subnormal vitamin-B_{12} values in the blood must be anticipated during therapy (Kristensen et al. 1957, Schwartz et al. 1957a, Killander 1958a). The reduced absorption of vitamin B_{12} that sometimes follows treatment with preparations of vitamin B_{12} plus purified hog pyloric mucosa in cases of pernicious anæmia has not been explained.

During the past year we have investigated vitamin-B_{12} absorption in patients with pernicious anæmia both untreated and treated. The object was to elucidate how frequently this blocking follows oral therapy, and to assess the ability to absorb vitamin B_{12} in patients treated orally.

Method

In all the experiments vitamin-B_{12} absorption was assessed by means of Schilling's technique for estimating urinary excretion. 0·5 μg. ^{60}Co vitamin B_{12} with an activity of 0·1 μC was employed. Two hours later, 1 mg. of radioinactive vitamin B_{12} was administered intramuscularly, and the excretion was measured in the 24-hour specimen of urine (Lous and Schwartz 1957). The preparations of intrinsic factor employed and the dosages are shown in the accompanying tables.

TABLE II—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (% OF ORAL DOSE) IN 24 HOURS IN PERNICIOUS-ANÆMIA PATIENTS TREATED BY INJECTION

Case no.	Intrinsic factor	
	None	Hog pyloric mucosa 100 mg.
1	0	18·4
2	0	22·7
3	1·7	17·1

Results

ABSORPTION IN RELATION TO TREATMENT

The absorption of vitamin B_{12} in 17 patients with untreated pernicious anæmia is shown in table I. Without intrinsic factor (I.F.) the excretion in this series was 0–4·4% (normal 10–40%). When ^{60}Co vitamin B_{12} was administered together with 100 mg. hog pyloric mucosa the excretion in all the patients attained normal levels, with values of 12·4–29·5%. All these patients with untreated pernicious anæmia had some, although very slight, spontaneous I.F. activity, the average excretion being 2·2% without supplementary I.F.

Patients with pernicious anæmia treated solely by injection preparations are few in this series. We have observed only 3 patients treated in this manner, and in all 3 absorption was normal with hog pyloric mucosa (table II).

16 patients with pernicious anæmia treated solely with preparations of vitamin B_{12} plus hog pyloric mucosa for varying periods (three months to four years) were examined in the same manner without I.F. and with 100 mg. hog pyloric mucosa. Only 5 patients showed a normal absorption, while the remaining 11 showed

TABLE III—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (% OF ORAL DOSE) IN 24 HOURS IN PERNICIOUS-ANÆMIA PATIENTS TREATED ORALLY WITH VITAMIN B_{12} PLUS HOG PYLORIC MUCOSA (BENDOGEN, CYCOPLEX)

Case no.	Treatment (yr.)	Intrinsic factor	
		None	Hog pyloric mucosa 100 mg.
1	2	1·7	0
2	1/2	2·7	0
3	2 1/2	0	0·5
4	1/2	3·7	1·3
5	3	1·5	1·4
6	1	0·6	1·5
7	2 3/4	0	1·8
8	1	1·3	1·9
9	3	0	2·7
10	1 1/2	3·7	3·0
11	1 1/2	1·2	4·1
12	1	2·2	12·2
13	1/4	0·9	13·9
14	1/2	1·2	15·4
15	4	1·6	22·6
16	1/2	1·2	24·3
Average		1·5	6·7

* This study was supported by a grant from Statens Almindelige Videnskabsfond.

blockage (table III). Practically all of these patients were treated with cycoplex. The conclusion must be drawn that blockage of the absorption of vitamin B_{12} affects the majority of patients treated with this preparation. Judging by published reports and our experience, the same is true of other preparations of the same type.

Table IV shows data on 7 patients who were treated orally both with preparations of the old type (i.e., 'Pylorin', 'Exopylorin') and with combination preparations (cycoplex, &c.). These patients apparently do not fare any better as only 2 absorbed normally. Judging from routine hæmatological investigations, these patients do well as long as they continue to take the old preparations, and in a few cases we have observed that such patients can return to the old preparations and do well.

The result of the vitamin-B_{12} absorption test in 10 patients with pernicious anæmia, all of whom were treated solely with pylorin and/or exopylorin for several years, appears from table V. Of the 10 patients, 2 showed subnormal absorption values with 100 mg. hog pyloric mucosa; but these patients, despite the extremely long period of therapy, absorb vitamin B_{12} excellently—in sharp contrast to patients treated with combination preparations for quite brief periods. The majority of patients who have had pernicious anæmia for a very long time have lost the last spontaneous I.F. activity, the average excretion of vitamin B_{12} without supplied I.F. being 0·6%, compared with 2·2% in the untreated cases.

TABLE IV—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (%) IN 24 HOURS IN PERNICIOUS-ANÆMIA PATIENTS TREATED ORALLY WITH CRUDE STOMACH PREPARATIONS (PYLORIN, EXOPYLORIN) AND VITAMIN B_{12} PLUS HOG PYLORIC MUCOSA (CYCOPLEX)

Case no.	Treatment (yr.): pylorin + cycoplex	Intrinsic factor	
		None	Hog pyloric mucosa 100 mg.
1	6 + 1/2	0	0
2	17 + 3	0	0
3	14 + 3	0	0
4	8 + 1 1/2	3·3	2·0
5	2 + 1 1/4	1·0	2·5
6	20 + 2 1/2	2·5	16·9
7	10 + 4	0·8	19·8
Average		1·1	5·9

These results (tables I–V) accord closely with clinical experience which shows that initial treatment of pernicious anæmia with combined preparations (vitamin B_{12} plus small quantities of pyloric mucosa) produces an excellent effect (Meulengracht 1953), while prolonged treatment with these preparations not infrequently fails.

This blockage of absorption of vitamin B_{12} is apparently common and very pronounced, and its development must be due to the new type of preparations as it is observed only occasionally and to a very slight extent following treatment for years with preparations of the pylorin-exopylorin type.

How rapidly the blockage of vitamin-B_{12} absorption comes on can be estimated only indirectly from the present material and published reports; but, as the majority of the patients have been treated for only one to two years, the time involved cannot be long.

We investigated vitamin-B_{12} absorption before the start of treatment and followed it in an attempt to solve this problem. The result is shown in table VI. In 1 patient a moderate fall in the absorptive ability (measured by the urinary excretion test) from 19 to 12% during the period of investigation was observed; while in the remaining patients the fall was more pronounced and in 3 out of the 6 patients the ability to absorb vitamin B_{12} failed entirely after six, nine, and twelve months. This corresponds to the decline in serum-vitamin-B_{12} and the hæmatological relapse, both of which must lag somewhat behind the defective absorption. Routine hæmatological investigation in these patients does not render sufficiently early information that anything is wrong. We have observed such patients with subacute combined degeneration of the spinal cord and low serum-vitamin-B_{12} values while the hæmoglobin percentages were normal. Thus, the most severe failure of treatment may occur without any warning fall of the hæmoglobin level.

TABLE V—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (%) IN 24 HOURS IN PERNICIOUS-ANÆMIA PATIENTS TREATED ORALLY WITH PYLORIN AND/OR EXOPYLORIN (CRUDE STOMACH)

Case no.	Treatment (yr.)	Intrinsic factor	
		None	Hog pyloric mucosa 100 mg.
1	20	0	7·6
2	12	0·5	8·3
3	14	0	11·6
4	10	0	12·0 (50 mg.)
5	10	4·4	15·3
6	20	0	17·8
7	22	0·5	19·1
8	23	0	24·3
9	1/2	0·7	26·4
10	14	0	26·6
Average		0·6	16·9

Nothing definite is yet known as regards the duration of the blockage. We have not observed any improvement in the ability to absorb vitamin B_{12} but are investigating this by gradually returning to injection therapy.

Mechanism of Blocking

The following facts are now known regarding the development of "blocking" of vitamin-B_{12} absorption:

1. That it is produced by treatment with purified hog pyloric mucosa plus vitamin B_{12}.
2. That injection therapy does not give rise to blockage.
3. That treatment with large quantities of the whole gastric pylorus of the hog does not cause blockage and that this treatment is effective in pernicious anæmia.
4. That the blockage does not exist with human intrinsic factor.

The fact that preparations containing whole pylorus (pylorin, exopylorin) do not cause blockage caused us to investigate this substance as I.F. in observations on the absorption of vitamin B_{12} in normally reacting patients and in patients with blockage.

Table VII shows that pylorin employed as I.F. gives the same results as pure pyloric mucosa. If the patient exhibits blockage for pyloric mucosa, this is also the case for pylorin (300 mg. pylorin contains about 100 mg. mucous membrane substance).

The blockage appears, therefore, to be related to the hog intrinsic factor. In patients with blockage a resistance

TABLE VI—URINARY EXCRETION OF ^{60}CO VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF HOG PYLORIC MUCOSA 100 MG. IN PATIENTS WITH PERNICIOUS ANÆMIA BEFORE AND DURING TREATMENT WITH CYCOPLEX (VITAMIN B_{12} PLUS HOG PYLORIC MUCOSA)

Case no.	Duration of treatment (mos.)					
	0	3	6	9	12	18
1*	19·3	15·2	1·2	0	0·7	..
2	24·0	..	..	..	1·8	..
3	29·5	29·4	..	1·3	..	..
4	..	..	..	..	24·9	4·2
5	19·0	..	13·9	..	12·2	..
6	17·1	14·0	..	7·6	..	..

* Pyloric mucosa 50 mg.

TABLE VII—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF HOG PYLORIC MUCOSA AND PYLORIN (MUCOSA PLUS MUSCULARIS) IN PERNICIOUS-ANÆMIA PATIENTS

Treatment	Intrinsic factor		
	None	Pyloric mucosa 100 mg.	Pylorin 300 mg.
Untreated ..	3·8	14·4	13·0
Exopylorin ..	0·5	8·3	9·7
Cycoplex ..	3·3	2·1	1·5
,, ..	0	0	0
,, ..	0·6	1·0	0

(in the intestinal wall?) has developed, preventing the passage into the circulating blood of vitamin B_{12} bound to this substance.

The question then arises whether hog mucosa merely by its presence in the intestine may also inhibit the absorption of vitamin B_{12} if this substance is administered bound to homologous I.F. This does not appear to be the case. Table VIII shows results in 4 patients with blockage, investigated with hog and with human I.F. alone and in mixtures. Human fundus I.F. was prepared from fundus mucous membrane from patients submitted to partial gastrectomy for duodenal ulceration. The mucous membrane from the body of the stomach was dried, finely divided and defatted, but was otherwise untreated.

TABLE VIII—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF HOG PYLORIC MUCOSA, HUMAN FUNDUS MUCOSA, AND COMBINATIONS OF THESE IN PERNICIOUS-ANÆMIA PATIENTS WITH " BLOCKED " VITAMIN-B_{12} ABSORPTION

Case no.	None	Intrinsic factor			
		Hog pyloric mucosa 100 mg.	Human fundus mucosa 500 mg.	Hog pyloric mucosa 100 mg. + after 3 minutes human fundus mucosa 500 mg.	Human fundus mucosa 500 mg. + after 3 minutes hog pyloric mucosa 100 mg.
1	0·9	2·5	13·6	5·4	16·7
2	3·0	6·2	13·3	5·5	14·7
3	3·3	2·0	7·4	4·9	12·9
4	2·0	1·8	18·3	8·0	14·6

It will be observed that when ^{60}Co vitamin B_{12} is once bound to homologous I.F. it is absorbed adequately, but when it is bound to hog I.F. the absorption is reduced considerably, despite the presence of active homologous I.F. In other words, this experiment shows that vitamin B_{12} must be bound to I.F. in order to be absorbed. This has been made clear by cases with pernicious anæmia which react to one but not to another I.F. preparation.

This resistance in the intestine to absorption of vitamin B_{12} bound to hog pyloric mucosa is only relative.

TABLE IX—EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF INCREASING DOSES OF HOG PYLORIC MUCOSA AND ADMINISTRATION OF HUMAN I.F. IN PERNICIOUS-ANÆMIA PATIENTS

Group	None	Hog pyloric mucosa 100 mg.	Hog pyloric mucosa 400 mg.	Hog pyloric mucosa 3500 mg.	Human fundus mucosa 500 mg. (or gastric juice)
Untreated pernicious anæmia	3·6	26·8	27·4	21·6	11·5
,, ,, ,,	4·5	13·1	22·7	..	8·1
,, ,, ,,	2·0	26·6	13·6	18·8	17·4
Pernicious anæmia with " blocked " absorption ..	0·6	1·0	..	2·9	13·0
,, ,, ,,	0	1·0	3·7	6·8	12·8
,, ,, ,,	1·3	1·9	2·2	8·6	18·3
,, ,, ,,	0	0	0	9·9	13·7
,, ,, ,,	3·3	2·0	0·8	12·8	16·1
,, ,, ,,	1·5	1·5	11·3	14·5	..
,, ,, ,,	2·2	1·3	8·3	15·5	6·2
Intestinal malabsorption? ..	0	1·8	..	11·0	3·0

There is, as yet, no satisfactory explanation of this condition. In table IX the absorption of vitamin B_{12} is shown in " blocked " patients with pernicious anæmia, who received increasing and excessively great quantities of pyloric mucosa in doses of up to 35 times that usually employed, and, in addition, the absorption with a human intrinsic-factor preparation. While all patients showed blockage for 100 mg. pyloric mucosa (which gives an excretion of 12–29% in the Schilling test in untreated patients) the blockage is only partially present for 400 mg. and even less for 3500 mg. hog pyloric mucosa. It appears that with these excessive doses of hog pyloric mucosa it is possible to overcome, at any rate partly, the intestinal blockage.

TABLE X—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS WITH HOG PYLORIC MUCOSA BEFORE AND AFTER 6 DAYS' TREATMENT WITH AUREOMYCIN 250 MG. FOUR TIMES DAILY IN PERNICIOUS-ANÆMIA PATIENTS WITH " BLOCKED " VITAMIN-B_{12} ABSORPTION

Case no.	Before aureomycin	After aureomycin
1	3·3	1·5
2	0	0
3	1·2	1·0

As a possible explanation of blockage, an alteration of the intestinal flora favouring the production of large numbers of vitamin-B_{12}-utilising bacteria has been postulated (Meulengracht 1955). Theoretically, this is not very probable as vitamin B_{12} is, on administration, already bound to pyloric mucosa and human intrinsic factor is fully active in patients with blockage. We have attempted to alter the intestinal flora with aureomycin in 3 patients. As will be observed from table X, no changes in the blockage in these patients were observed. Control of the bacterial flora was not undertaken, but some effect might have been anticipated from this experiment if an altered intestinal flora was the explanation.

We have previously (Schwartz et al. 1957b) discussed the possibility that blockage was caused by an immunity phenomenon, and that locally or systemically an antibody to the foreign protein was formed. Though innumerable people eat pork they do not eat it raw; and I.F. in the commercial preparations is partly raw as it does not tolerate high degrees of heat. Many antigen-antibody reactions can be inhibited by treatment with suprarenal cortical steroids, and we have therefore attempted to treat patients suffering from pernicious anæmia and blockage with prednisone. Table XI shows that, in the dosage employed and over the period of the test the treatment was without effect upon the ability to absorb vitamin B_{12}.

TABLE XI—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS WITH HOG PYLORIC MUCOSA 100 MG. BEFORE OR AFTER 5 DAYS' TREATMENT WITH PREDNISONE 5 MG. FOUR TIMES DAILY IN PERNICIOUS-ANÆMIA PATIENTS WITH " BLOCKED " VITAMIN-B_{12} ABSORPTION

Case no.	Before prednisone	After prednisone
1	0·4	0·7
2	2·7	0
3	1·5	2·0

A weighty argument for the immunity theory would be if preparations from a second, or rather a third, type of animal were effective in patients with pernicious anæmia. If such an I.F. preparation was effective where hog I.F. was not—in patients with blockage—this would strongly support the hypothesis that blockage is a species-specific immunity phenomenon.

TABLE XII—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF PYLORIC MUCOSA FROM HOG AND WILD BOAR IN PERNICIOUS-ANÆMIA PATIENTS

Treatment	Intrinsic factor		
	None	Pyloric mucosa from hog 100 mg.	Pyloric mucosa from wild boar 100 mg.
Exopylorin	0	7·6	9·9
,, ...	0	17·8	15·1
Untreated	3·6	26·8	24·7
Cycoplex (" blocked " patients) ..	1·3	1·9	3·2
,, ,, ,, ..	3·3	2·0	3·9

We have tested horse gastric mucosa both from the pyloric segment and from the fundus but found no effect whatever.

The ordinary domestic pig has a cousin or half-brother —the wild boar—and pyloric mucosa from wild boar was tested. The preparation proved to exert an excellent I.F. effect; but, as will be seen from table XII, the relationship was too close and the patients with blockage also showed blockage for the pyloric mucosa of wild boars.

It has been demonstrated that human and hog pyloric mucosæ were without effect as I.F. on gastrectomised rats (Holdsworth and Coates 1956, Nieweg et al. 1956). On the other hand, in some experiments rat gastric juice in doses of 70 ml. was active as I.F. in patients with pernicious anæmia (Abels et al. 1957); this dosage corresponded to 25 ml. human gastric juice.

We have therefore administered to a series of patients with pernicious anæmia, both with blockage and without, 50 ml. rat gastric juice prepared as described by Abels. The result is shown in table XIII; and it will be seen that, with intrinsic factor from a species sufficiently distantly related to the pig and to man, no blockage is present. This finding greatly supports the presumption that in patients with blockage an antibody, of some sort or another, is present and directed towards the activity of the intrinsic factor in hog pyloric mucosa.

Discussion

The present work reveals that blockage of absorption of vitamin B_{12} is common in patients with pernicious anæmia who have been treated for long periods with oral preparations of vitamin B_{12} plus hog pyloric mucosa. This phenomenon often develops after treatment for a few months.

This blockage is a new phenomenon, associated with the new type of oral preparations. Patients treated solely with the old gastric preparations consisting of whole pylorus show, as a rule, good absorption of vitamin B_{12} despite oral therapy for many years. The explanation of the phenomenon of blockage must be sought in the composition of the new preparations. These preparations are characterised by the slight quantity of pyloric mucosa (more or less purified) in proportion to the massive quantities of vitamin B_{12} which have been added.

TABLE XIII—URINARY EXCRETION OF ^{60}Co VITAMIN B_{12} (%) IN 24 HOURS AFTER ADMINISTRATION OF HOG PYLORIC MUCOSA, HUMAN FUNDUS MUCOSA, AND RAT GASTRIC JUICE IN PATIENTS WITH PERNICIOUS ANÆMIA

Group	Intrinsic factor			
	None	Hog pyloric mucosa 100 mg.	Human fundus mucosa 500 mg.	Rat gastric juice 50 ml.
Untreated pernicious anæmia ..	4·5	13·1	8·1	12·4
,, ,, ,, ,, ..	3·6	26·8	11·5	25·7
Pernicious anæmia with " blocked " absorption	0·9	2·6	13·6	8·8
,, ,, ,, ,,	0·6	1·0	13·0	11·0
,, ,, ,, ,,	1·5	1·5	..	11·1
,, ,, ,, ,,	2·2	1·3	6·2	12·2
,, ,, ,, ,,	1·3	1·9	18·3	13·3
,, ,, ,, ,,	3·3	2·0	16·1	15·5
Intestinal malabsorption?	0	1·8	3·0	3·8

Cycoplex thus contains, in the normal maintenance dose (two capsules), 100 mg. purified hog pyloric mucosa plus 10 μg. vitamin B_{12}. Exopylorin, on the other hand, contains 3500 mg. hog pyloric mucosa in addition to 1500 mg. liver residue in a carton (the daily maintenance dose). No vitamin B_{12} has been added to exopylorin; but the content, mainly from the liver residue, is approximately 2 μg.

The investigation shows that the blockage is directed against vitamin B_{12} bound to hog pyloric mucosa. Even if homologous I.F. is present, vitamin B_{12} cannot be normally absorbed when it is first attached to hog pyloric mucosa. As the patients with blockage absorb vitamin B_{12} excellently when it is bound to homologous I.F., vitamin B_{12}, as such, probably does not play any part in this blockage; but it is difficult to prove this conclusively as the activity of vitamin B_{12} and of I.F. is always determined together.

The concept of formation of an antibody to a substance or substances in hog pyloric mucosa appears reasonable, and we postulated this previously (Schwartz et al. 1957b). This hypothesis receives considerable support from the investigations with rat I.F., which proved to be effective in patients with blockage. These experiments indicate that I.F. is species-specific to a notable extent, so that an antibody may be developed to the intrinsic factor from a particular species of animal.

Taylor and Morton 1958 have shown that antibody to I.F. may be produced experimentally in rabbits, and we have shown (Schwartz 1958) that in serum from several patients with pernicious anæmia with blockage an I.F.-inhibiting substance was present. No definite relationship between the I.F.-inhibiting factor and blockage was, however, found, and this factor alone can scarcely explain the blockage.

The observation that in certain cases the blockage can be overcome to some extent by excessive doses of pyloric mucosa, as is shown in table IX, cannot be satisfactorily explained. Together with the antibody theory " saturation " (local or systemic?) of the antibody might be considered; but this is pure speculation.

Summary

The blockage of absorption of vitamin B_{12} caused by oral treatment of pernicious anæmia with preparations of vitamin B_{12} plus hog pyloric mucosa, demonstrated previously, was confirmed. Such blockage is very common, and it often occurs after treatment for a few months.

Patients treated with preparations of crude pylorus develop this blockage either not at all or to a negligible extent.

The blockage is related to hog pyloric mucosa. Vitamin B_{12} bound to this substance is poorly absorbed despite the presence of active human intrinsic factor. Alterations in the intestinal flora do not appear to explain the blockage.

The blockage is not present in absorption tests with homologous intrinsic factor, nor with intrinsic factor from another species (rat). This observation supports significantly the hypothesis that blockage is an immunity phenomenon, the intrinsic factor being to some extent species-specific.

references overleaf

THE SIGNIFICANCE OF BASEMENT-MEMBRANE CHANGES IN THYROID DISEASE

ANGUS E. STUART M.B. Glasg., M.R.C.P.E.
W. S. A. ALLAN M.B. Edin., M.R.C.P.E.

From the Department of Pathology, University of Edinburgh

IN 1957 Doniach and Roitt demonstrated thyroid antibodies in Hashimoto's disease and suggested that the stimulus for their production was the slow liberation of colloid from the thyroid follicles. More recently similar antibodies have been described in thyrotoxicosis (Goudie et al. 1957) and in subacute thyroiditis (Felix-Davies 1958). It appears that thyroglobulin is immunologically inert when contained within the follicles but is treated by the host as a foreign protein when extravasated into the interstitial tissues. The reason for leakage of colloid from the follicle is not understood, but the process may be analogous to the escape of protein through the damaged glomerular basement membranes in nephritis. The purpose of this paper is to determine the relation, if any, between basement-membrane changes in the thyroid gland and the presence of a high thyroid-antibody titre.

Material

Thyrotoxicosis.—8 thyroid glands from patients with high antibody titres were studied histologically, and likewise 10 thyroid glands from patients without antibodies served as controls. At least four blocks were taken from each gland, and, without knowledge of the antibody titres, the sections were graded according to the degree of basement-membrane injury.

Hashimoto's disease.—10 thyroid glands, all showing diffuse Askanazy-cell change, lymphoid follicles with interstitial round-cell infiltration, and various degrees of fibrosis, were studied.

Subacute (de Quervain's) thyroiditis.—3 typical cases were investigated.

Methods

Histology.—Routine paraffin sections of tissues fixed in formol corrosive were stained with a modified silver stain (Slidders, Fraser, and Lendrum 1958). This method was selected after trial of many other basement-membrane stains, because it gave clear and constant results.

BASEMENT-MEMBRANE INJURY IN 18 THYROID GLANDS FROM PATIENTS WITH THYROTOXICOSIS

Thyrotoxicosis without antibodies	Thyrotoxicosis with high antibody titre
−	++
−	++
−	++
−	++
−	+
−	+
−	+
−	−
+	
++	

The injury is assessed as minor or absent (−), moderate (+), and severe (++).

Serology.—Antibodies were detected by the tanned-cell hæmagglutination technique using human group O cells and purified thyroglobulin. The end-point was taken as the last tube to show a broad even carpet of agglutinated cells. The term "high titre" in this paper means a serum-titre of over 1/5000.

Results

The normal appearance of the basement membranes of the thyroid follicles is seen in glands from patients without antibodies (fig. 1). The membrane stains intensely and evenly. It measures 0·1 to 0·2 μ in width, and is closely applied to the base of the epithelial cells, forming a continuous unbroken lining and completely sealing off the follicle from the capillary vessels. The latter appear as ovoid or polygonal spaces bounded by the basement membrane, whose inner surface is lined by flattened endothelial cells. Even in hyperplastic papillary processes the

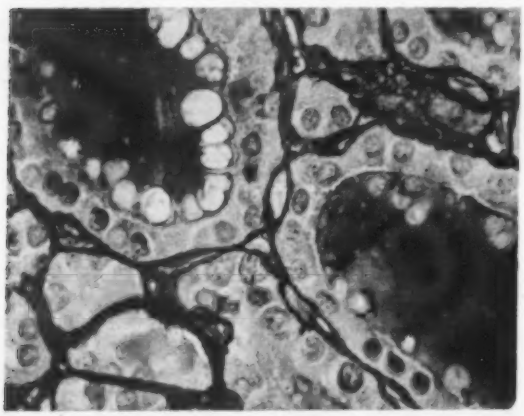

Fig. 1—Photomicrograph of thyroid gland to show the normal relationship of the basement membrane to the capillary vessels. (Silver. ×650.)

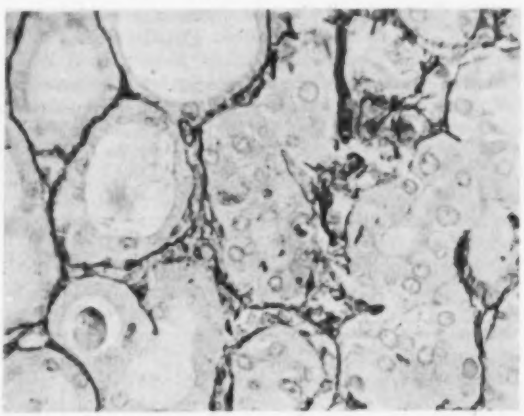

Fig. 2—Fragmentation of the basement membrane in thyroid tissue from a patient with thyrotoxicosis and a high antibody titre. (Silver. ×500.)

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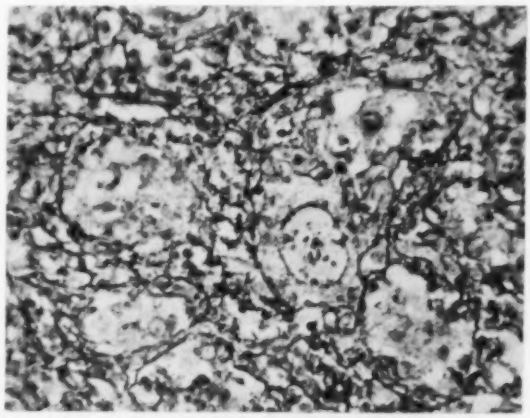

Fig. 3—Severe basement-membrane damage in Hashimoto's disease. (Silver. ×400.)

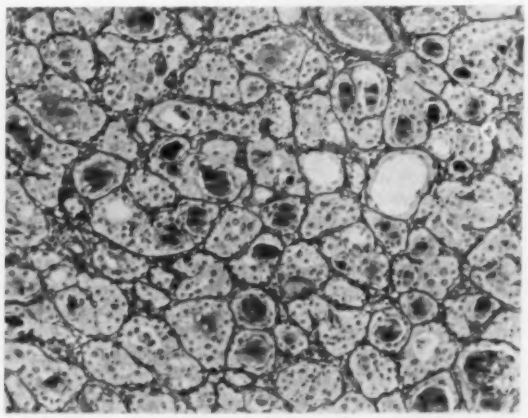

Fig. 4—Apparently normal basement membrane in Hashimoto's disease. (Silver. ×120.)

basement membrane closely follows the proliferative epithelium.

Thyrotoxicosis.—In this series abnormal basement membranes are seen mainly in thyroid glands from patients with a high antibody titre. The table shows the results of grading the 18 glands from thyrotoxic patients according to the degree of basement-membrane injury. 8 of the 10 thyrotoxic patients without antibodies showed no significant degree of basement-membrane damage, whereas 7 of the 8 patients with high antibody titres showed extensive areas of injury.

The damage is entirely focal and consists of fragmentation, beading, and duplication of the basement membrane.

Fragmentation is seen as sharp breaks in continuity, and is often associated with a wavy irregular appearance (fig. 2) quite unlike the straight smooth line of a normal membrane. Fragmentation must be distinguished from artefact caused by a faulty block or knife. Artefact appears as parallel rows of argentophil fibres attached at right-angles either to a basement membrane or to the interlobular fibrous tissue, in such a way that it resembles the teeth of a garden rake.

The term "beading" is borrowed from Sommers and Meissner (1954). Beading is often seen as minute argentophil dots or globules, and is probably caused by failure of adjacent parts to stain with silver.

In duplication the basement membrane is split into two or more layers. This is seen more often in subacute thyroiditis than in either Hashimoto's disease or thyrotoxicosis. All three types of damage are usually present together.

Hashimoto's disease.—The changes are qualitatively similar to those in thyrotoxicosis, but they are diffuse and more severe. Fig. 3 shows typical widespread changes with severe fragmentation. The basement membrane is not always damaged as much as this; fig. 4 shows an apparently normal pattern, but the typical fragmentation and irregularity can be seen under a higher magnification in fig. 5.

In this series all 10 patients with Hashimoto's disease had very high antibody titres, and all showed severe diffuse injury to the basement membrane.

Subacute thyroiditis.—The appearances are rather different here. There is an increase of reticulin-like fibres between the follicles, and the fragmentation seems much coarser (fig. 6) than that previously described. In follicles showing giant cells or swollen epithelium there is usually considerable duplication of the membrane, whereas intact and normal-looking follicles show no such change.

Only 1 of the 3 patients had an appreciable titre of antibody, although all showed quite severe basement-membrane changes.

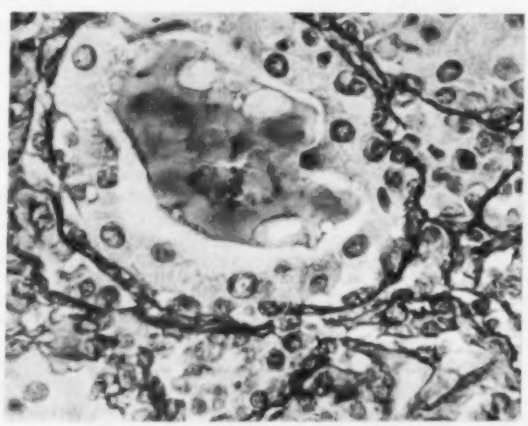

Fig. 5—High-power view of fig. 4 revealing typical fragmentation of the basement membrane. (Silver. ×625.)

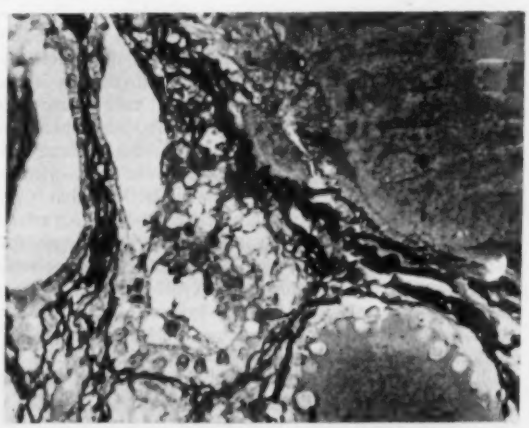

Fig. 6—Duplication and coarse fragmentation of the basement membrane in subacute thyroiditis. (Silver. ×500.)

Discussion

In most cases damage to the basement membranes of the thyroid follicles was closely associated with a round-cell infiltration of lymphocytes and plasma cells; fig. 5 shows plasma cells intimately associated with a breach in the follicle. In a few glands extensive basement-membrane damage was seen in areas which did not contain chronic inflammatory cells. This was also found by Sommers and Meissner (1954), who pointed out that " basement-membrane changes need not be associated with lymphocytic nodules ".

Our findings establish a clear relation between basement-membrane damage, as shown by silver impregnation methods, and the presence of antibodies in significant titre. Admittedly most silver-staining methods are notoriously fickle and the problem of artefact is serious. Nevertheless in our experience this new modified silver method is remarkably free from the usual defects.

The possibility that the fragmentation may be an artefact due to infolding of the thyroid follicle in a particular plane of section was excluded by critical examination of thyroid tissue in serial section.

The cases of thyrotoxicosis were chosen because of the great difference in antibody titre. In one group the titres were high, and in the other no antibodies were present. This was the only way in which the relation between antibodies and histological changes could be established, since the intermediate group of glands was difficult to classify.

Our findings appear to establish a relation between irregularity and lack of continuity of the follicular basement membrane, and the escape of colloid into the interstitial tissue with consequent inflammatory-cell reaction. Thus there seems to be a case for regarding basement-membrane damage as the anatomical basis of thyroid-antibody formation.

The state of the basement membrane in epithelium showing Askanazy-cell change (which is characteristic of Hashimoto's disease) is of special interest. In this study Askanazy-cell change was nearly always associated with lymphocytes and plasma cells, but in 2 cases there was no significant degree of round-cell infiltration and in both of these the basement membranes were normal. This finding suggests that the nutritional change leading to the formation of the Askanazy type of epithelium does not necessarily result in impairment of the basement membrane.

The factors responsible for basement-membrane damage remain obscure, although in some conditions—such as a virus-induced thyroiditis—it is probably secondary to severe epithelial damage. If the basement-membrane deficiency in other forms of thyroiditis is also secondary to epithelial injury, it would seem reasonable to invoke the action of thyroid antibodies which are generally assumed to be responsible for the parenchymatous damage in Hashimoto's disease (*British Medical Journal* 1958). But it is difficult to believe that these circulating antibodies possess any significant cytotoxic effect, since they are present in high titre in some patients with thyroid hyperfunction. In such cases one would expect their cytotoxic effects to result in suppression of function. Accordingly it seems probable that the antibodies are related to phagocytosis of extravasated colloid, and that the primary defect in Hashimoto's disease is a failure of the integrity of the basement membrane, as Sommers and Meissner (1954) suggested.

In both Hashimoto's disease and thyrotoxicosis there is a reasonably good correlation between pathological changes in the basement membrane and the presence of antibodies, although some exceptions were found. The relationship is less definite in subacute thyroiditis, but perhaps a larger series of cases is required to elucidate this point.

Summary and Conclusions

Basement-membrane changes are widespread and severe in Hashimoto's disease and subacute thyroiditis, and are seen to a lesser degree in thyrotoxicosis.

Basement-membrane damage is usually associated with lymphocytic and plasma-cell infiltration, but it may be seen independently, possibly because it arose at an earlier stage of the disease.

In this series of 31 cases, there is a direct relationship between basement-membrane irregularities and high antibody titres.

If the function of the basement membrane is to maintain the immunological integrity of the follicle by preventing access of colloid to the interstitial tissue, a break in the continuity of the membrane, as observed in this series, would provide an anatomical basis for thyroid-antibody formation.

We wish to thank Prof. G. L. Montgomery for his help, Miss Sheila Heath for assistance with the silver stains, and Mr. T. C. Dodds for the photomicrographs.

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NEGATIVE L.E.-CELL PHENOMENON IN TRUE SYSTEMIC LUPUS ERYTHEMATOSUS

P. FORMIJNE
M.D. Amsterdam
PROFESSOR OF INTERNAL MEDICINE, UNIVERSITY OF AMSTERDAM

F. VAN SOEREN
M.D. Amsterdam
ASSISTANT INTERNAL MEDICINE, UNIVERSITY OF AMSTERDAM

The chance that a phenomenon has a significance.—J. BARCROFT. *Features in the Architecture of Physiological Function.*

IN discussing the significance of phenomena, much more interest is usually paid to their presence than their absence; and this is true for the lupus-erythematosus (L.E.)-cell phenomenon. While its presence in certain diseases has often been described, its absence in proved or probable lupus erythematosus has received scarcely more than a mention (Dubois 1953, McGehee and Shulman 1954).

Case-history

A man of 53 was admitted to hospital in September, 1957. He presented the typical picture of systemic lupus erythematosus.

In January, 1957, both ankle-joints had become stiff, red, painful, and swollen. After a few weeks, a continuous high fever developed and multiple hæmorrhages appeared on the legs. In May the patient became dyspnœic and œdema was present in both legs.

In September there was found a sharp systolic murmur at the apex of the dilated heart, moist rales at the base of both lungs, a firm palpable liver and spleen, free fluid in the peritoneal cavity, and œdema and hæmorrhages in both legs.

Laboratory investigations.—White cells 8000 per c.mm., normal differential count. Red cells 4 million per c.mm., hæmoglobin 78%. Platelets 300,000 per c.mm. Bleeding-time 3 min., clotting-time 4 min. Urine: protein +, urobilin ++;

microscopy of the sediment showed 20–25 erythrocytes in each field of vision and some hyaline and red-cell cylinders. Urea-clearance 50%. Urine concentration up to specific gravity of 1015. Serum-proteins (paper electrophoresis): total 7·84 g. (albumin 1·88 g., α_1-globulin 0·56 g., α_2-globulin 0·6 g., β-globulin 0·7 g., γ-globulin 4·1 g.) per 100 ml. Blood-cultures repeatedly negative.

During earlier observation in the dermatological ward in 1952 a diagnosis of discoid lupus erythematosus had been made, and was confirmed by a histological examination of the skin.

Notwithstanding the fact that the diagnosis could be considered proved in this case, the L.E.-cell phenomenon was completely negative in all the modifications which were tried. Dr. J. v. d. Schoot, who has developed a very sensitive technique for the L.E.-cell phenomenon, similar to that of Bobory (Bobory and Leövey 1956), confirmed that the test was negative in this case.

A Possible Explanation

No explanation could at first be found, but further immunological investigation showed that the Wassermann reaction could not be carried out owing to anticomplementary activity of the patient's serum. The possibility was then considered that a connection might exist between this activity and the negative L.E.-cell phenomenon.

The L.E.-cell phenomenon consists of two phases—the transformation of the nuclear matter and the subsequent phagocytosis of the transformed nuclei. Phagocytosis is only achieved by active movements of the leucocytes, and it has been shown that complement is necessary for these movements. These facts suggest the hypothesis that the presence in the serum of substances which inhibit the action of complement prevent the movements of the leucocytes necessary for phagocytosis. In this way the presence of complement-inhibiting substance could mask the specific L.E. factor.

This hypothesis was tested by the following observations:

(1) When excess normal fresh human complement was added to the serum of our patient, the L.E. phenomenon became clearly positive.

(2) When the patient's serum was added to a strongly positive L.E. serum the L.E.-cell phenomenon was inhibited, as judged by comparison with the same dilution of the positive L.E. serum.

(3) Positive L.E. serum was heated at 56°C for between 30 and 60 min. Fresh leucocytes, suspended in their own plasma, together with fresh leucocyte nuclei,* suspended in saline, gave a weakly positive L.E.-cell phenomenon with this inactivated serum. When fresh leucocytes suspended in saline (after washing twice with saline) and fresh leucocyte nuclei in saline (after washing twice with saline) were used, however, no L.E. cells could be found; only a few loose bodies were detected. After addition of fresh human or guineapig serum, a few rosettes and a few classic L.E. cells were found.

(4) The addition of guineapig serum as a source of complement to the inactivated positive L.E. serum gave, to our surprise, negative results. That the guineapig complement could be different from the human complement with regard to the L.E.-cell phenomenon seemed very improbable. The simple answer to this problem took a long time to find. The guineapig serum which we received from an immunological laboratory had been stabilised by the addition of Richardson's fluid. It was found that this addition was responsible for the negative L.E.-cell phenomenon in our preparation. As soon as fresh guineapig complement without any addition was used, the phenomenon could be demonstrated again in the inactivated positive L.E. serum.

Recently we received from Dr. W. Hijmans, of the University of Leiden, another serum giving a negative L.E.-cell phenomenon (low complement and positive Wassermann reaction) though the clinical picture suggested systemic L.E. Only after the addition of fresh human serum to the system of negative-L.E.(?) serum, washed leucocyte suspension, and washed leucocyte-nuclei suspension, was a L.E.-like phenomenon produced: the inclusion body and the loose bodies were not totally homogeneous. Neither typical L.E.-cells nor tart cells were found.

* The nuclei were prepared by shaking leucocytes for 5 minutes in distilled water; after centrifugation the sediment was suspended in saline.

Postmortem Findings

The patient's condition deteriorated and a diastolic murmur developed in the aortic region. Renal functions deteriorated rapidly. After ten days of prednisone therapy he discharged himself from hospital. He died in cardiac failure in January, 1958. Necropsy confirmed the diagnosis: there was a Libmann-Sachs endocarditis of the left heart, cirrhosis of the liver, splenomegaly, and typical kidney lesions (wire loops and hyalinisation of glomeruli).

Summary

Free-acting complement plays an important role in the production of the L.E.-cell phenomenon.

Inactivation of a positive L.E. serum by heating is possible, when it is used with washed leucocytes and washed leucocyte nuclei. After addition of human or guineapig complement to this system, a weakly positive L.E.-cell phenomenon reappears.

The L.E.-cell phenomenon can be negative, notwithstanding the presence in the serum of the specific L.E. factor and of complement, if complement-inhibiting substances are also present. In this case the L.E.-cell phenomenon can be demonstrated by the addition of fresh complement.

The L.E.-cell phenomenon may perhaps be inhibited by lack of complement.

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ANALYSIS OF LIPIDS OF THE ARTERIAL WALL

C. J. F. BÖTTCHER
D.Sc. Leiden
PROFESSOR OF PHYSICAL CHEMISTRY IN THE UNIVERSITY OF LEIDEN

J. G. KEPPLER
Ph.D. Amsterdam
OF THE UNILEVER RESEARCH LABORATORY, VLAARDINGEN (HOLLAND)

C. C. TER HAAR ROMENY-WACHTER
M.D. Leiden

E. BOELSMA-VAN HOUTE
Ph.D. Leiden

C. M. VAN GENT
Ph.D. Leiden

OF THE LABORATORY FOR PHYSICAL CHEMISTRY
OF THE UNIVERSITY OF LEIDEN

IN 1956 Sinclair suggested that the development of atherosclerosis may be connected with a relative deficiency of essential fatty acids (linoleic, linolenic, and arachidonic acids) in the diet. In his view such a deficiency would lead to a decrease in the degree of unsaturation of the cholesterol esters in the body. The more highly saturated cholesterol esters thus formed would tend to be deposited in tissues—inter alia, arterial walls, causing atheroma.

To test this hypothesis it seemed useful to undertake a detailed analysis of the lipids extracted from single human aortas in different stages of atherosclerosis.

To ascertain how the fatty-acid composition of the lipids of the arterial wall is related to the stage of development of the disease, we decided to examine whole intima and media rather than isolated atheromatous plaques. In advanced atherosclerosis the intima cannot be separated completely from the media, and we therefore included much of the media in all our intima preparations. Though this meant that the intimal lipids were diluted to some extent with lipids from the media, this contamination is small, and the results from aortas at different stages of disease are strictly comparable.

The object of the analysis was to separate the lipids into phospholipids, free fatty acids, free sterols, sterol esters, and glycerol esters, and to determine the composition of the fatty-acid mixtures obtained from four of these five fractions.

Methods

The aortas were obtained from necropsies performed at the laboratory of pathological anatomy, University Hospital, Leiden. They had been stored at either 0°C or −30°C, depending on the time of storage necessary before they could be prepared.

The adventitia and as much as possible of the media were stripped from the aorta, and the remaining part was cut into small pieces (1 sq. cm.) before freeze-drying. Each aorta was assigned to one of four stages of atherosclerosis according to the appearance of the intima, as follows:

Stage O.—No atheroma visible to the naked eye.
Stage I.—Distinct plaques of not more than 2 mm. diameter.
Stage II.—Distinct or confluent plaques of more than 2 mm. diameter.
Stage III.—As for stage II, but with visible necrosis or ulceration.

After they had been freeze-dried for eight hours, the pieces were extracted in a Soxhlet apparatus with a succession of four solvents (each for three hours)—acetone, ethanol, ether, and methanol-chloroform (1 : 2). The extracts were combined to give the total lipid extract.

The *phospholipids* were separated from the other lipids by dialysis in petroleum ether through a rubber membrane, a method developed by Boldingh (Van Beers et al. 1957).

The *free fatty acids* were removed from the dialysate by means of the ion-exchanger ' Amberlite ' IRA-400-OH, and recovered from the amberlite with HCl-ethanol (Borgström 1952). The remaining lipids were chromatographically separated into glycerol esters, sterol esters, and free sterols, on a silicic-acid column, by the method of Fillerup and Mead (1953).

The *fatty-acid moieties* of the phospholipids, glycerol esters, and sterol esters were obtained by saponification.

These fatty acid mixtures and also the free fatty acids were methylated with HCl-methanol.

The *methyl esters* obtained were analysed by gas chromatography using ' Apiezon ' as stationary phase and a gas-density balance as detector.

Results

1. Large differences were found in the lipid analyses of different aortas classified as having the same stage of atherosclerosis. For example there were some with a relatively high proportion of lauric acid, while others showed a larger than average proportion of unsaturated C_{20} fatty acids. Consequently in this paper the amount of fatty acids will be expressed in percentage ranges rather than in exact figures.

2. The analysis of 22 aorta preparations (3, 5, 5, and 9 of stages O, I, II, and III respectively) confirmed the well-known fact that the percentage of lipids, and also the cholesterol content of the lipids, increases with the severity of the atherosclerosis. The quantity of lipids isolated from a single aorta preparation (from the aortic arch to the iliac arteries) varied from 200 to 800 mg.

3. At all stages of atherosclerosis the *phospholipids* contained mainly saturated fatty acids—particularly palmitic acid (35–45% of the acids) and stearic acid (20–25%). Other saturated acids (C_{12}, C_{14}, C_{15}, C_{17}) were found in small amounts (less than a few per cent. each). Of the unsaturated C_{18} fatty acids (20–30%), oleic acid formed the major portion (at least 60% of the total C_{18} unsaturated fraction). Small amounts of other unsaturated fatty acids (e.g., palmitoleic acid and arachidonic acid) were also found.

With increasing atherosclerosis, the phospholipids did not show an increasing percentage of saturated fatty acids: on the contrary, this percentage tended to decrease.

4. In the fatty-acid mixtures from the *glycerol esters* comparatively little stearic acid was found (5–10%) and much more palmitic acid (20–35%). Other saturated acids were lauric acid (2–6%) and myristic acid (3–9%). The C_{18} unsaturated fatty acids were present in amounts varying from 35 to 50% (chiefly oleic acid). C_{20} unsaturated fatty acids represented only a few per cent.

In the glycerol-ester fraction the percentage of saturated fatty acids bore no significant relation to the degree of atherosclerosis.

5. In the fatty-acid mixtures from the *sterol esters* relatively small amounts of palmitic acid (8–25%) and stearic acid (3–10%) were found. The unsaturated fatty acids predominated (5–10% palmitoleic acid, 35–45% oleic acid, 20–30% linoleic acid) and their predominance seemed to increase with the atherosclerosis.

Discussion

These results do not support the hypothesis of Sinclair (1956) and others that deposition of cholesterol esters of saturated fatty acids in the arterial wall is a characteristic feature of atherosclerosis. On the contrary, we found that with increasing atherosclerosis the percentage of saturated fatty acids in the sterol esters tends to fall.

The results are in agreement with those recently presented by Luddy et al. (1958), who analysed the lipids from isolated atheromatous plaques. In the fatty acids of the sterol-ester fraction of a preparation obtained by extracting the pooled atheromas from a number of aortas, they found 4·2% saturated fatty acids, 61·5% oleic acid, and 23·6% linoleic acid, whereas their corresponding figures for the sterol esters of (supposed healthy) blood-plasma were 18·7% saturated fatty acids, 23·5% oleic acid, and 47·5% linoleic acid. On the other hand Tuna et al. (1957), who made the same comparison between the lipids from pooled atheroma and the lipids from blood-plasma, concluded that the fatty-acid " spectrum " of the cholesterol esters from serum is similar to that of cholesterol esters from plaques—both including, for example, about 40% linoleic acid among the fatty acids found.

The fact that sterol esters of saturated fatty acids are not preferentially deposited in atheromatous plaques does not exclude the possibility that an excess of saturated fatty acids in the diet contributes to the development of atherosclerosis. Many people show an increase in the serum-cholesterol level when they take a diet rich in saturated fatty acids (see, e.g., Ahrens et al. 1957). Recent experiments by Hegsted et al. (1957) indicate, however, that the borderline should be drawn not between saturated and unsaturated fatty acids but between non-essential unsaturated fatty acids on the one hand and saturated and essential fatty acids on the other hand. There is also other evidence that oleic acid should be put on the unfavourable side of the balance (see, e.g., James et al. 1957). We accordingly decided to continue our analyses, paying special attention to the content of unsaturated fatty acids of different degrees of unsaturation. Since the experi-

ments described in this paper were done in the second half of 1957, the analytical methods have been further developed in the physicochemical laboratory of Leiden University, and a more detailed account of them will be published soon. The first results with the improved methods are in general agreement with the conclusions we have stated above.

Summary

The lipids of single human aortas in different stages of atherosclerosis have been analysed into phospholipids, free fatty acids, sterol esters, glycerol esters, and free sterols, and the composition of the fatty-acid mixtures from four of these five fractions has been analysed by gas chromatography.

The hypothesis that the deposition of saturated cholesterol esters is a characteristic feature of atherosclerosis was not confirmed. On the contrary, the proportion of saturated sterol esters fell as the severity of atherosclerosis increased, as also did the proportion of saturated phospholipids. The degree of saturation of triglycerides bore little relation to the degree of atherosclerosis.

The significance of the ratio between non-essential and essential unsaturated fatty acids deposited in the aorta is being studied by similar methods.

These investigations have been made with the support of the Dutch National Health Organisation T.N.O. We are indebted to the personnel of the Laboratory of Pathological Anatomy at Leiden for aid in assembling the necropsy material. With pleasure we acknowledge the cooperation of members of the staff of the Unilever Research Laboratory at Vlaardingen (in particular Mr. J. H. Recourt) and of the Laboratory for Physical Chemistry at Leiden (in particular Miss H. A. M. ter Haar and Miss M. Kooiman).

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THE NUCLEAR SEX-CHROMATIN PATTERN IN DYSTROPHIA MYOTONICA

JOHN MARSHALL
M.D. Manc., F.R.C.P.E., M.R.C.P., D.P.M.
READER IN CLINICAL NEUROLOGY IN THE UNIVERSITY OF LONDON

P. K. THOMAS
M.D., B.Sc. Lond., M.R.C.P.
From the Academic Unit in Neurology, Institute of Neurology, Queen Square, London, W.C.1

THE finding of female nuclear morphology in a proportion of cases of Klinefelter's syndrome (Plunkett and Barr 1956, Bradbury et al. 1956) has led to examination of other instances of male hypogonadism. Since testicular atrophy is often encountered in dystrophia myotonica, it is of interest to know whether this condition is associated with any abnormality of sex-chromatin pattern. Grumbach et al. (1956) examined a single male case and reported that the nuclei were of typical female type.

We have studied 14 males and 5 females with dystrophia myotonica. In all patients buccal smears stained with cresyl-violet by a modification of the method of Dixon and Torr (1956) were examined. Because the findings in buccal smears or skin may differ from the findings in leucocytes (Ashley and Jones, 1958), polymorphonuclear leucocyte " drumstick " counts were also made. Furthermore, because variations in the number of drumsticks in females may be significant (Ferriman et al. 1957), 500 cells were counted for each patient, in Leishman-stained blood-films, in order to obtain an adequate estimate of their frequency.

In all 19 cases the nuclear sex-chromatin pattern, as seen both in the buccal smear and in the leucocytes, was appropriate to the phenotypic sex. Reversal of nuclear sex in males with dystrophia myotonica appears, therefore, to be uncommon. In the females, the number of drumsticks seen was well within the normal range as given by Davidson and Robertson Smith (1954).

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ACUTE PANCREATITIS COMPLICATING PREDNISOLONE THERAPY

MARTIN S. BOURNE
M.B. Manc.
MEDICAL REGISTRAR

HUGH DAWSON
M.B. Manc.
HOUSE-PHYSICIAN

CRUMPSALL HOSPITAL, MANCHESTER

OF the very few recorded instances of acute pancreatitis occurring during therapy with corticotrophin (A.C.T.H.) or the adrenocortical hormones, the diagnosis was in each case confirmed at necropsy. Baar and Wolff (1957) described 2 examples—in an asthmatic child taking cortisone and in a child with dermatomyositis receiving prednisolone. Marczynska-Robowska (1957) reported a child with Still's disease who received corticotrophin and died with pancreatic necrosis. The fact that the child also had smallpox and pneumonia makes the association between corticotrophin and the pancreatic necrosis uncertain. A more definite association is reported by Zion et al. (1955), who described anuria, secondary to the shock of acute pancreatitis, in a middle-aged woman taking cortisone for scleroderma.

Case-report

A man, aged 65, was admitted to hospital on Feb. 27, 1958, under the care of Dr. S. Oleesky. For four years before admission to hospital he had suffered from a migrainous type of headache and for three years he had hesitancy and frequency of micturition. In September, 1957, he noticed swelling of both legs extending above the knee and decreasing at night. His face was puffy, he felt tired, and thought his headaches were worse. At this time albuminuria was discovered. He had no pain or dyspnœa. Two months later he had an attack, lasting for one week, of left pleurisy with cough, sweating, and shortness of breath.

The only thing of note in the past medical history was an attack of scarlet fever when he was 18 years old from which he made a complete recovery.

When first seen in Crumpsall Hospital there was gross pitting œdema of both legs up to mid-calf level and also some œdema of the sacrum. His blood-pressure was 235/125 mm. Hg. He had bilateral direct inguinal herniæ, for which he had worn a truss for many years. His retinal arteries were narrowed

but no papilloedema, hæmorrhages, or exudates were seen. The urine contained 7 g. of albumin per litre, occasional red cells and leucocytes, but was sterile. The hæmoglobin was 12·5 g. per 100 ml. and white-cell count 4000 per c.mm. The serum-cholesterol was 540 mg. per 100 ml., total serum-proteins 3·96 g. per 100 ml., and paper electrophoresis of the serum showed a decrease in albumin and gamma-globulin and a slight increase in alpha-2 globulin: blood-urea was 16 mg. per 100 ml., serum-sodium 133, potassium 5·46, chloride 106 mEq. per litre. His electrocardiogram was within normal limits and a radiograph of the chest showed clear lung fields though the heart was of hypertensive configuration.

There was no evidence of a collateral circulation to suggest thrombosis of the inferior vena cava and a congo-red test did not indicate amyloidosis.

Accordingly, we felt he had type-II nephritis and the hypertension was either associated with this nephritis or was unconnected with the renal lesion and was essential in type. Therefore he was treated with low-salt, low-fluid, and high-protein diet.

On March 1, 1958, reserpine 0·25 mg. t.d.s. and katonium 15 g. t.d.s. were started. Reserpine was stopped on March 12, and by then the blood-pressure had settled to 190/105. On March 5 prednisolone 40 mg. per day was started, the dose being reduced to 20 mg. per day on March 9. Two days after starting prednisolone his œdema was much less and there was an increase in urinary output. Eight days after the start of the prednisolone, there was aching pain in the left loin and across the lumbar area lasting thirty-six hours. Chlorothiazide 1 g. daily began on March 12. On March 15 he was discharged home on chlorothiazide 1 g. daily, prednisolone 5 mg. b.d., and katonium 15 g. t.d.s.

On March 25 he was seen in the outpatient clinic after ten days at home. For the previous twenty-four hours he had had

Radiograph of chest on April 2, 1958, showing a rounded opacity in the left lower lobe.

a pain across the lumbar area and around the right side of the abdomen. His blood-pressure was 170/90, and there was a trace of ankle œdema. Serum-amylase was 186 units per 100 ml.* (Street and Close 1956). On March 31 he developed left pleural pain and was readmitted to hospital two days later. By then the abdominal pain had subsided. He had a temperature of 99·6°F which persisted for one week. The blood-pressure was 180/110 and there was a trace of sacral and ankle œdema. There was some tenderness just above and to the right of the umbilicus. Serum-amylase was 66 units on April 3 and fell to 13 units on April 8. X-ray of the chest (see figure) on April 2 showed a rounded opacity at the left lower lobe, and on that day intramuscular penicillin was given and continued for ten days. His katonium was stopped but the prednisolone 5 mg. b.d. and the chlorothiazide 1 g. daily were continued. On April 17 there was some slight recurrence of the abdominal pain and the serum-amylase rose to 31 units. On April 19 the dose of prednisolone was reduced to 5 mg. daily and on May 20 it was discontinued.

A cholecystogram on April 14 was normal and liver-function tests on April 17 were also normal. By May 20 X-rays showed considerable clearing of the left lower-lobe opacity.

The diagnosis of pancreatitis rests on the abdominal pains and the characteristic rise in serum-amylase.

* Normal range 9 to 35 units per 100 ml.

Discussion

The association between pancreatitis and therapy with adrenocortical hormones is interesting in the light of the experimental findings of Stumpf and Wilens (1955). They noted a raised serum-amylase in rabbits given cortisone. Necropsy showed pancreatitis in 21 and peripancreatic fat necrosis in 8 of 27 rabbits who had been given this drug. These findings have been confirmed by Bencosme and Lazarus (1956) who observed pancreatic ductular proliferation in cortisone-treated rabbits, which resolved after the cortisone was stopped and was unaffected by antibiotics or vitamins (Lazarus and Bencosme 1956).

In view of these experimental results Carone and Liebow (1957) reviewed the postmortem findings on 54 patients who died, from varying causes, whilst on therapy with corticotrophin or adrenal steroids. They discovered postmortem evidence of acute pancreatitis in 16 of these 54 patients. Thus there appears to be a definite danger of pancreatitis developing when treatment is given with corticotrophin or adrenocortical hormones for some other, unrelated condition. *The Lancet* (1957) questioned whether pancreatic lesions developing during cortisone therapy could be diagnosed during life. Clearly cortisone may well mask many of the symptoms of acute pancreatitis, but, if the diagnosis is suspected, as was so in this case, and, if the serum-amylase is estimated, then we feel the diagnosis can be made. On the other hand this occurrence of pancreatitis during cortisone therapy is probably rare (*British Medical Journal* 1958).

It is interesting that our patient had a recrudescence of his left lower-lobe pneumonia, or a small pulmonary embolus, after his attack of pancreatitis. In the past two and a half years 19 patients with acute pancreatitis have been seen at Crumpsall Hospital. 3 of these patients, during their illness, developed lower-lobe pneumonia, confirmed by X-ray or postmortem examination. This occurrence of a pulmonary lesion in pancreatitis, and in particular small left pleural effusions, has been reported though perhaps it has never been adequately emphasised. The cause may be related to reduced diaphragmatic movement during the acute inflammatory stage of the illness.

Summary

Acute pancreatitis developed in a patient with type-II nephritis being treated with prednisolone. Pancreatitis should be considered as a cause of abdominal pain in patients on corticotrophin or adrenocortical hormone therapy, and the serum-amylase estimated.

We wish to thank Dr. S. Oleesky for much help and advice in preparing this report.

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SODOKU IN A CHILD
THE RESULT OF MOUSEBITE

J. W. FARQUHAR
M.B. Edin., F.R.C.P.E.
SENIOR LECTURER, DEPARTMENT OF CHILD LIFE AND HEALTH, UNIVERSITY OF EDINBURGH;
ASSOCIATE PHYSICIAN, ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN

P. N. EDMUNDS
M.B., B.Sc. Edin.
BACTERIOLOGIST, ASTLEY AINSLIE HOSPITAL, EDINBURGH

J. B. TILLEY
M.D. Durh., D.P.H.
MEDICAL OFFICER OF HEALTH, COUNTY OF NORTHUMBERLAND

SODOKU is the name applied to ratbite fever caused by infection with the *Spirillum minus*. Although it is a well-documented disease, the last Edinburgh case published was that of Herzfeld and Mackie in 1926, and the last British case that of Thompson in 1945. No reference to mice as the source of infection in the United Kingdom has been found, but the following case provides circumstantial evidence in favour of such a possibility.

Case-report

History

A robust boy of 11, when on holiday on a Northumbrian farm, was bitten on his finger by a mouse. About a week later he developed severe headache and high fever, and when these persisted despite symptomatic treatment he was taken home to Scotland. Two weeks after the bite, the puncture marks on his finger became painful, swollen, and red; and large spots or blotches appeared on the backs of his arms and legs. These were pink at first but faded like a bruise in the course of a week. Treated with kaolin poultices the finger gradually returned to normal.

For the next seven weeks he looked an ill child. Temperatures of 103°F were recorded intermittently; and at such times his conjunctivæ were injected, his eyes were prominent, his eyelids were swollen, and "he roared with headache". His appetite failed and he lost 8 lb. or more. When admitted to hospital three months after the bite he still looked ill, pale, and tired, though his finger had healed. Small soft glands were palpable in the neck, axillæ, and groins, but neither the liver nor the spleen was enlarged, and examination of other systems revealed no abnormality.

Laboratory Investigations

Urine normal. Hæmoglobin 13·9 g. per 100 ml.; white-cell count 10,200 per c.mm. (polymorph neutrophils 74%). Erythrocyte-sedimentation rate (E.S.R.) 40 mm. in one hour (microtechnique). Tuberculin test negative. Catscratch antigen test negative. Widal, Weil-Felix, and Paul-Bunnell tests negative. Leptospiral agglutinations (seven different strains) negative. Wassermann reaction weakly positive.

During two weeks in hospital the temperature only once rose above 99°F. When it was 100°F blood was taken and inoculated intraperitoneally into mice and guineapigs, and later these were examined for leptospiræ and for *Spirillum minus*. Repeated examinations over a period of three weeks were negative; and peritoneal washings from 2 guineapigs and 3 mice failed to show the spirillum.

Treatment

The E.S.R. remained high, and further delay in starting treatment was considered unwise. An intensive course of penicillin was given and in a month the E.S.R. was normal. Seen seven months later the boy was very well and his Wassermann reaction was negative.

Further Inquiries

Child's story.—The boy was emphatic that he had been bitten by a mouse and not by a young rat. The animal measured little more than three inches from nose to the tip of its tail, and, before he caught it, he had seen it run and jump. A young rat of that size cannot do this.

Inquiry at the farm.—The farmer remembered threshing a cornstack during July when children on holiday had been about, and he had seen them playing with mice caught from the stack. He said that there were no rats in his buildings, and negative results with test baits seemed to confirm this. About ten days later, during further threshing, the farm workers were able to collect 7 live mice and these were immediately sent to Edinburgh.

Examination of mice.—2 mice were dead on arrival and unsuitable for examination. The remaining 5 were killed and dark-ground and Leishman-stained smears were made from nasal tissue, liver, spleen, and kidney. *Sp. minus* in considerable numbers was demonstrated in the nasal smear of 1 mouse.

The organisms showed the characteristic features. They were small, apparently spiral, 4–7 μ long with 2–5 regular waves, and thicker than a spirochæte of the same length. There was no distortion, the long axis always being quite straight, indicating that the organism was rigid. Flagellæ could not be demonstrated, but the dark-ground smear showed rapid motility.

Pooled tissues from the mice were ground up and inoculated into 5 mice and 5 guineapigs. Repeated examination of blood and peritoneal washings failed to reveal any *Sp. minus*.

Discussion

Sodoku has resulted from the bite of various animals.

The ferret (Targhetta 1948), the dog (Ripley and Van Sant 1934), the Indian squirrel (Das Gupta 1942), and the Kenya rat (Heisch 1950) have been incriminated; and the bandicoot and the weasel are included in reviews by Brown and Nunemaker (1942), Hull (1955), and Adams and Carpenter (1955). Cats were responsible for cases described by Izumi and Kato (1917), Mock and Morrow (1932), and Walker (1937).

Most of these were thought to have recently acquired the infection from rodents.

Mousebite was responsible in cases recorded by Ishiwara et al. (1917), Bayne-Jones (1931), and Jenkinson and Jordan (1932). Infection of children in this way was described by Jungbluth (1932) and by Reitzel et al. (1936) whose patient was a boy of 14 bitten by a fieldmouse. Neither in the laboratory nor in the wild state do infected mice show any evidence of disease. As they have *Sp. minus* in their noses and mouths, they can transmit the disease without shedding their blood.

In our case the incubation period may have been less than seven days, but the extensive review of ratbite fever by Brown and Nunemaker (1942) showed that it can be as brief with *Sp. minus* as it is with *Actinomyces muris*. Only the positive Wassermann reaction, which occurs in half the cases of sodoku, gave direct laboratory support to the diagnosis in this child. The demonstration of *Sp. minus* in the snout of a fieldmouse caught on the farm where the patient was bitten provides circumstantial evidence in favour of the essentially clinical diagnosis.

The risk to people who handle mice—e.g., in disinfestation, in the laboratory, or even in keeping pets ought to be more generally known; there seems to be a widespread belief that mice are relatively harmless. As a sidelight on this, we may mention that a member of the health department, when putting the farm mice into a carrying box, was bitten on the hand. Had he not prudently worn strong leather gloves, he might well have become another case for investigation.

We wish to thank Miss B. Newton, assistant librarian of the Royal College of Physicians of Edinburgh, for help with the literature, and the Public Health Inspector and his staff of the borough of Whitley Bay for assistance in collecting the mice. We are also grateful to Dr. J. D. Coghlan of the University of Edinburgh bacterio-

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Preliminary Communications

A METHOD OF PREPARING FIBRINOGEN TAGGED WITH RADIOACTIVE IODINE

THE following method of tagging fibrinogen with radioactive iodine was suggested by the experience of one of us (W. E. C.) in tagging tyrosine.

Radioactive iodine ($^{131}I_2$) was prepared from 1 mc. carrier-free radioactive iodide (as sodium iodide) in 0·1 ml. dilute sodium thiosulphate solution by the addition of one drop of N $^{127}I_2$ in methanol and one drop of 0·01 N H_2SO_4. 5 ml. of human fibrinogen in citrate saline, concentration about 4 mg. per ml., prepared by the Jaques phosphate-buffer method,[1] was added. The mixture was allowed to stand for five minutes at room temperature. It was then passed through a Cl-phase resin column ('Amberlite' IRA 400 Cl) to remove free iodide and iodine. The tagged fibrinogen was stored in small quantities at −20°C.

Confirmation of tagging was obtained by the following simple tests.

On the addition of thrombin, clotting occurred, and when the clot was removed the percentage of the total radioactivity which was in the clot varied (depending on the batch of fibrinogen) from 89 to 94. When 10% trichloracetic acid was added to precipitate the proteins, 98% of the activity was protein-bound and came down with the precipitate. After oxidation with dilute sulphuric acid and 0·01 N potassium dichromate to change any free iodide to iodine, which was then extracted with chloroform, only 4% of the total radioactivity was extractable.

Confirmation of tagging was also obtained by electrophoresis, and by chromatography before and after hydrolysis.

This simple method of tagging fibrinogen produces a material in which 89–94% of the radioactivity is coagulable: this represents a significant advance on a method previously reported [2] in which only about 75% of the radioactivity was coagulable.

The results of electrophoretic and chromatographic studies, together with the use of the fibrinogen to demonstrate fibrinolytic activity in normal human plasma, will be presented later.

W. ELSPETH CLEMENT
B.SC. Glasg.
GEORGE P. MCNICOL
M.B. Glasg., F.R.F.P.S., M.R.C.P.E.
University Department of Medicine, Royal Infirmary, Glasgow, and Regional Physics Department, Glasgow

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ORAL TREATMENT OF RINGWORM WITH GRISEOFULVIN

THERE are certain chronic fungous infections of the skin which most dermatologists would think of as untreatable. The failure of treatment is due to the inaccessibility of the fungus. This is particularly true of *Trichophyton rubrum* infection of the nails. A systemic antifungal agent is needed.

Wilson [1] has said:

"the ideal antifungal drug even for superficial mycoses would seem to be one which could be safely administered internally in amounts sufficient to endow the cells eventually destined to produce keratin with the power to resist fungi completely, this power persisting as they become keratinized, and the drug thus exerting its effects from within outward."

The reason for this preliminary communication is that an agent has been reported which gives promise that it may meet these needs. This is griseofulvin, which was first isolated as long ago as 1939 by Oxford et al.[2] as a metabolic product of *Penicillium griseofulvum dierckx*. A great deal of work has been done on this substance, which is now recognised as an antibiotic with antifungal properties. Its structure has been established by Grove et al.,[3] and griseofulvin has been used in agriculture for the control of plant fungal pathogens.

In August this year Gentles [4] first reported work which showed that griseofulvin given orally in very small doses controlled experimental *Microsporon canis* and *T. mentagrophytes* infections in guineapigs. The compound has also been used successfully by Lauder and O'Sullivan [5] for the treatment of *T. verrucosum* ringworm induced in cattle.

The toxicity of griseofulvin administered by mouth to mammals is very low, and it is notable that single oral doses do not kill mice at a level of 50 g. per kg. bodyweight or rats at a level of 10 g. per kg. Griseofulvin has been reported by Paget and Walpole [6] as having effects upon mitosis, in some respects resembling those of colchicine, when given in very large doses intraperitoneally or intravenously, these effects being particularly pronounced on bone-marrow and seminal epithelium. It must be remembered, however, that other drugs that have been used clinically will produce similar pathological changes in animals if given in amounts approaching the lethal dose or if given otherwise than by mouth. These effects have not been seen in animals maintained for considerable periods on griseofulvin given by mouth in doses very much greater than those needed to achieve a therapeutic effect. It therefore seemed reasonable to conduct limited clinical trials.

Nine patients with clinical *T. rubrum* infection of the skin or nails are under treatment. Cultural confirmation of the organism is not complete in all these cases. The arbitrary dose that has been given is 0·5 g. four times a day. No local treatment has been used. The less controlled comments come, as always in clinical trials, from the patients, who speak of the rapid relief of itching, when it has existed, and, in three cases the reappearance of sweating of the palms, previously absent for many years.

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Infected nails appear to be growing out with regular increases in the extent of normal nail below the clinically infected area. The skin of the palms loses its hyperkeratosis and in two to three weeks approaches the normal. The fungus becomes increasingly difficult to find in scrapings and may not be found at all after two weeks from skin with a relatively thin horny layer such as the buttock. In two cases, however, hyphal fragments were seen, after one month of treatment, in scale from the soles.

One case of *M. audouinii* infection of the scalp has been treated. This child also had three lesions on the face which disappeared altogether in two weeks. It was interesting to see, after three weeks, the fluorescence under Wood's light become dull and lustreless, and hair with no fluorescence and no fungus growing out from the scalp.

No side-effects have been reported or observed in these patients, unless indigestion in one patient and perhaps thirst in two others can be so regarded.

These few results support our hope that griseofulvin may be of therapeutic value. It will obviously be many months before its uses and limitations can be well established and the cases followed up for sufficiently long.

This substance represents a fundamentally new therapeutic approach, but the optimum dosage and the duration of treatment must yet be discovered.

We are grateful to Glaxo Laboratories, Middlesex, for supplies of griseofulvin.

D. I. WILLIAMS
M.B. Lond., F.R.C.P.
R. H. MARTEN
B.M. Oxon., M.R.C.P.
I. SARKANY
M.R.C.P.

King's College Hospital,
London, S.E.5

THE CAUSE OF THE SUPERSENSITIVITY OF ORGANS AFTER DEGENERATION OF SYMPATHETIC NERVES

AFTER degeneration of the postganglionic sympathetic fibres the involuntary muscles become supersensitive to the action of adrenaline and of noradrenaline. Thus Meltzer and Auer [1] showed that the denervated iris was supersensitive to adrenaline, and more recently Armin, Grant, Thompson, and Tickner [2] have demonstrated that the denervated vessels of the rabbit's ear were supersensitive to adrenaline. The cause of the supersensitivity has been suggested by observations we have made on the tissues of animals treated with reserpine.

We found that when rabbits were treated with reserpine, and a spiral strip of the aorta was prepared, the strips were much more sensitive to noradrenaline than were strips prepared from normal rabbits. Now when strips of aorta from normal rabbits were ground up and extracted, they were found to contain a noradrenaline-like substance in amount equivalent to 0·5 μg. noradrenaline per g. (mean value). Strips of aorta from rabbits treated with reserpine, however, were found to contain only traces of this noradrenaline-like substance (Burn and Rand [3]). Thus the results suggested that the supersensitivity to noradrenaline of the aorta strips from reserpine-treated rabbits was due to the removal by reserpine of the noradrenaline-like substance normally present in the strips.

That degeneration of sympathetic fibres also leads to a diminution of noradrenaline present in organs was shown by von Euler and Purkhold,[4] who measured the amount of noradrenaline which they could extract from the spleen, the liver, the kidneys, and the submaxillary and the parotid glands of sheep. Whereas in a normal spleen the amount of noradrenaline was 3–4 μg. per g., in a spleen denervated 8 days previously the amount was as low as 0·005 μg. per g. A similar fall was observed in the other organs. Goodall [5] also observed a fall in the noradrenaline content of the heart of the sheep after degeneration of the fibres from the stellate ganglia.

However it has not previously been demonstrated that in an organ in which the supersensitivity to noradrenaline is known to occur following degeneration of sympathetic fibres, there is a loss of noradrenaline. We have now obtained such evidence for the iris of the cat's eye.

We removed the superior cervical ganglion on one side in cats, and allowed 2 weeks for degeneration of the postganglionic fibres. At the end of this time the cats were killed and the irises of the normal side and denervated side were extracted. The extracts were then tested for noradrenaline on the blood-pressure of the pithed rat. The mean figure for the normal side was found to be 0·06 μg. per iris, and that for the denervated side was 0·005 μg. per iris. In each animal the figure for the denervated side was much lower than that for the normal side.

Another group of cats was treated with reserpine and the amount of noradrenaline-like substance which could be extracted from the iris was determined. In these the mean figure was 0·01 μg. per iris.

Burn and Hutcheon [6] demonstrated that the denervated iris was supersensitive to noradrenaline, and we ourselves have observed that the iris in the reserpine-treated cat is supersensitive to noradrenaline.

These observations have thus led us to the conclusion that the supersensitivity of the denervated iris to noradrenaline is due to the loss of the noradrenaline normally present in the iris. It seems probable that the store of noradrenaline in the iris reduces the sensitivity of the iris to injected noradrenaline because there is always a small discharge from the store, so that some of the receptors in the iris are already occupied. In favour of this are observations on rabbit atria. Bertler, Carlsson, and Rosengren [7] showed that when hearts were removed from rabbits treated with reserpine, the noradrenaline present in the normal heart had disappeared. Burn and Rand [8] dissected the atria from rabbit hearts and measured the rate of contraction in an isolated-organ bath. They found that the mean rate of normal atria was 146 per minute but the mean rate of atria from rabbits treated with reserpine was 112. This indicated that the noradrenaline present in the normal atria was raising the rate of the pacemaker, and that a small discharge was always taking place from the store.

J. H. BURN
M.D. Cantab., F.R.S.
Professor of Pharmacology in the University of Oxford
M. J. RAND
PH.D. Sydney
Fellow of the Australian and New Zealand Life Insurance Medical Research Fund

Department of Pharmacology,
University of Oxford

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Reviews of Books

Ageing and Human Skill

A. T. WELFORD, M.A. London: Oxford University Press for the Nuffield Foundation. 1958. Pp. 300. 25s.

THIS is the final report of the Nuffield unit at Cambridge which, from 1946 to 1956, devoted itself to a study of the psychology of ageing. The object of its researches was to learn enough about ageing to be able to suggest how older people can be assisted in employment and training—an important objective, because it is unlikely that the increasing proportion of old people in our population can be supported indefinitely by their juniors, and many will wish to stay at work beyond the retiring age at present normal. Mr. Welford and his team have not confined their attention to old age but have studied the whole process of ageing from young adult life onwards, both in the laboratory and in the field. They have found that some of the most significant changes become apparent in the middle years and that it is at this time that measures to deal with the problems of old age may best be taken.

After two introductory chapters on the nature of age changes in performance and the nature of skill, the body of the book is devoted to a discussion of the ways in which age causes a slowing not only in sensory-motor performance but also in perception, problem-solving, and other situations in which a mental rather than a motor component is involved. Perhaps the most fundamental change is in perception. Old people take longer to do things, not because of physical weakness or poor vision, but because they are less quick to perceive what has to be done and the brain is slower to instruct the muscles. As people grow older they find it increasingly hard to make sense of complex material which comes into their vision and to identify objects quickly. Another important finding is evidence of enormous variation in the degree of impairment caused by ageing. In some people there is no demonstrable failing of the mental powers even in advanced age—a matter, of course, of simple observation. Less familiar is the finding that while performance of an easy task may fall off little with advancing age a small increase in the difficulty of the work may lead to a disproportionate impairment of performance. There is probably a limit to ability which is more readily reached as age advances.

The practical and evident conclusion is that the way to make work more suitable for old people is to make it straightforward and uncomplicated. A reduction in muscular effort is desirable but less important. Mechanisation does not always help since it may involve the manipulation of complex controls which old people find hard to learn. When they have to learn something new the task should be presented to them as simply as possible, not too much at a time, and at a pace which they can follow. Manipulative skills should be taught in as practical a way as possible without too much verbal instruction. Accurate learning is important from the first, for mistakes are hard to unlearn.

This fascinating and important book will be key reading for academic and industrial psychologists concerned with ageing. The geriatrician will find a good deal of the material familiar from Mr. Welford's chapter in *Modern Trends in Geriatrics*. The general reader will enjoy it, though some of the experimental evidence is heavy going and seems only to confirm what is obvious from clinical observation.

Congenital Anomalies of the Hand and their Surgical Treatment

ARTHUR JOSEPH BARSKY, M.D., D.D.S., attending surgeon for plastic surgery, Mount Sinai Hospital, New York City. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1958. Pp. 165. 43s.

ALTHOUGH deformities of the hand are among the commonest of all congenital anomalies, they have till recently attracted little attention except from medical geneticists (many of these deformities show an inherited pattern). Seldom have surgeons felt justified in advising any operative treatment, for most persons affected, even those with very abnormal hands, develop surprisingly good function in them. Attempts at surgical improvement have always been difficult and occasionally disastrous. In the past these operations have been virtually restricted to the amputation of supernumerary digits and the separation of webbed fingers. And even this last operation, which has an altogether deceptive simplicity about it, has by no means always benefited the patient.

During the past five years, however, the work of Kelikian, Doumanian, Riordan, and the author of this book has proved that the function of even grossly deformed hands can often be improved: an absent thumb can be replaced by rotating the index finger; the gap in a widely cleft palm can be closed: and, conversely, where the digits themselves are deficient, an artificial cleft in the carpus will provide a pinch mechanism.

Here Professor Barsky discusses such techniques. He does not describe every reported aberration: that would be impossible, for there are so many that they defy even classification. But about a dozen of the commonest anomalies are considered in detail, and, by the use of some 70 photographs, he shows how much can be done in each group of cases. He has thus written an attractive and easily read account of a subject of increasing interest.

Emotional Factors in Pulmonary Tuberculosis

DAVID M. KISSEN, M.D. London: Tavistock Publications. 1958. Pp. 246. 35s.

THIS book is the result of a series of investigations designed to meet the frequent criticism that psychosomatic studies are lacking both in controls and in objectivity. While it has long been believed that psychological factors play a part in the onset of pulmonary tuberculosis, statistical evidence on this point has not until now been obtained; and this, indeed, is the first really scientific investigation of tuberculosis as a psychosomatic disease.

Dr. Kissen's thesis is that tuberculosis is commonest in patients with a particular personality trait in that they have an "inordinate need for affection". 60% of tuberculous patients were deprived of affection in childhood, compared with 16% of controls. Furthermore, emotional factors were shown to precede the onset in a high proportion of cases, mostly due to a "break in a love link". The most common life situation giving rise to illness was a break (or threatened break) in a romance, engagement, or marriage. From these premises the author goes on to explain the increased incidence of tuberculosis in mental hospitals, in migrants and displaced persons, and during war.

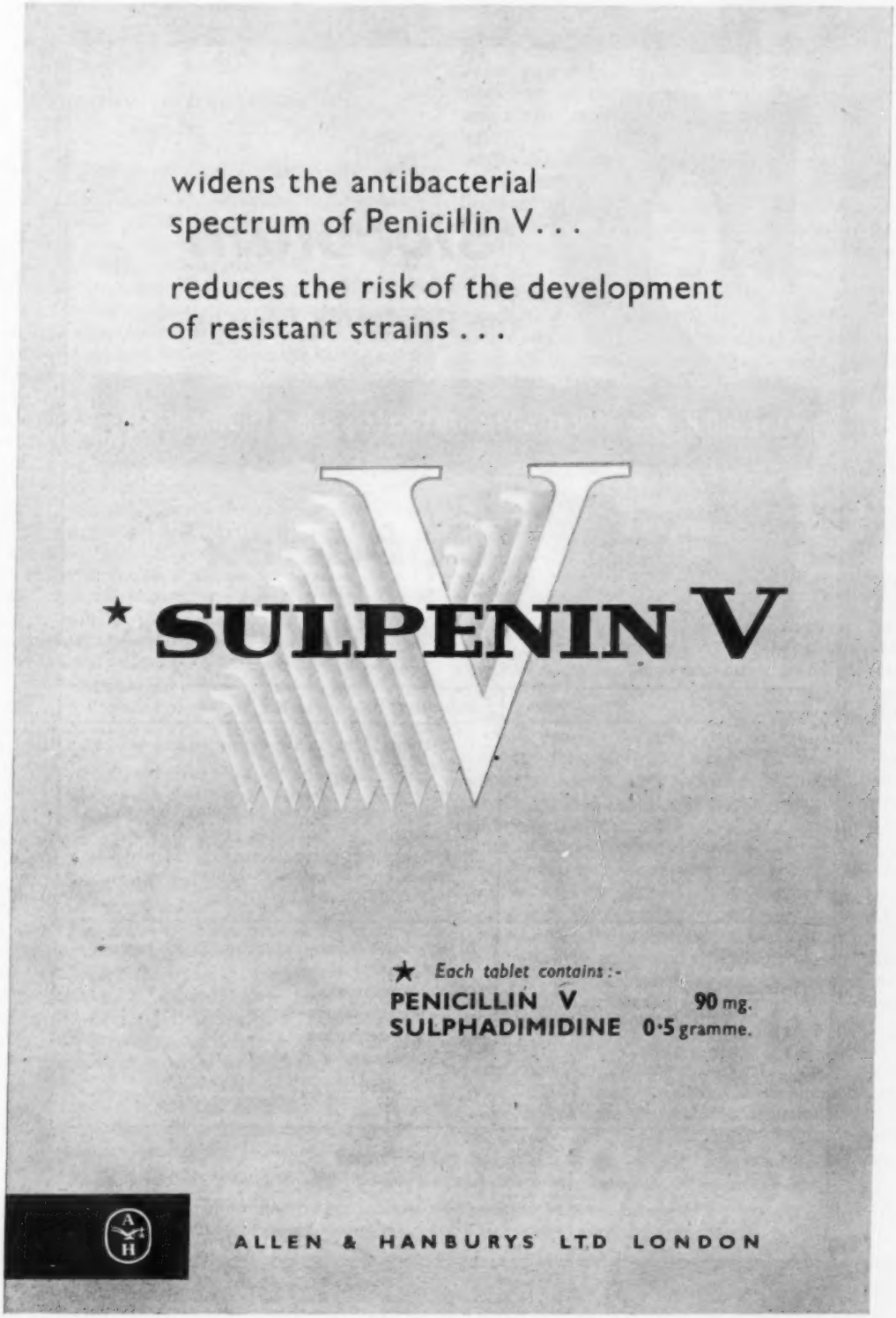
The literature on the psychosomatic approach to tuberculosis is reviewed, and other affections associated with the disease—for example, peptic ulcer and diabetes—are examined in the psychosomatic context. The book has much statistical detail relating to rather small numbers of patients and the figures are perhaps over-analysed; the many tables are described very fully in the text.

Nevertheless the central idea makes this an important addition to books on tuberculosis, and Dr. Kissen's theory should certainly be subjected to further controlled investigation.

Operative Surgery

Vol. 8. Editors: CHARLES ROB, M.CHIR., F.R.C.S., professor of surgery, St. Mary's Hospital, London; RODNEY SMITH, M.S., F.R.C.S., surgeon, St. George's Hospital, London. London: Butterworth. 1958. Pp. 363. £5 10s.

THIS immense work is rounded by the eighth and final volume, which is concerned with neurosurgery, ophthalmology, and a thoroughly comprehensive account of the operative procedures on otorhinolaryngology (indeed, too much space may have been devoted to the last part in comparison with neurosurgery). Whatever views may be held about the value of this type of work and the artistic merits of the illustrations upon which it relies so heavily, there can be no denying the arduous, almost herculean, task it has involved; and it says much for the editors that, with so many illustrations and contributors, only one illustration in all eight volumes can be found which is wrongly placed.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Localisation of Nephrotoxic Antigens

THE relation between acute glomerulonephritis in man and the disease produced in animals by injection of nephrotoxic sera has been studied with increasing vigour since the experimental disease was first described almost sixty years ago.[1] MASUGI [2] first clearly showed that a heterologous antiserum—rabbit anti-rat-kidney serum, for example—when injected intravenously into an animal of the species from which the kidney antigen was prepared produces an attack of glomerulonephritis. Extension of the work to other organs [3 4] soon showed that nephrotoxic antigens were widely distributed throughout the body, including the heart, voluntary muscle, lung, liver, alimentary canal, and placenta, and that they were not entirely species-specific, cross-reactions being demonstrable between rat and mouse [4] and between man and dog.[5] Further, the localisation of the antigen within the glomerular capillary basement membrane was shown both by the fixation there of radioiodine-labelled antibody after its intravenous injection [6] and by the preparation of active antigens from the basement membranes after ultrasonic dissociation of isolated glomeruli.[7] The work of many subsequent investigators has indicated that the nephrotoxic antigens in the various organs are associated with both vascular and non-vascular basement membranes as well as with argyrophilic reticulin—a distribution which was further confirmed by the work of CRUICKSHANK and HILL,[8] who showed that, in vitro, fluorescein-conjugated antisera not only stain the basement membranes of glomeruli but also react specifically with basement membranes and reticulin throughout the body. It is especially noteworthy that, despite this widespread distribution of the nephrotoxic antigen, the lesions that result from the injection of the antisera are confined exclusively to the glomeruli.

This paradox and the whole question of the distribution of nephrotoxic antigens have been fruitfully studied by KRAKOWER and GREENSPON.[9] Their previous work on ultrasonically disintegrated glomeruli had excluded the cells themselves as significant depots of nephrotoxic antigen. They therefore concentrated on the supportive and poorly cellular tissues throughout the body, such as tendon, lens, cornea, and heart valve. By an approximate quantitative technique they were able to classify these various tissues into three groups with regard to their content of nephrotoxic antigen. Since, in this classification, antigen content seemed to be correlated with vascularity they sought to define more accurately, by an injection technique, the vascularity of the tissues and especially the surface area of the capillary vessels. Their results confirm unequivocally the positive correlation between the surface area of the " minute " vessels present in a tissue and its content of nephrotoxic antigen. At the top of the list was the renal glomerulus, 5–10 mg. of which sufficed to stimulate a rabbit to produce a significant quantity of nephrotoxic serum. For a similar response with lung as antigen 450 mg. was required; and with choroid plexus and the choroid of the eye the equivalent quantities were 250 and 1000 mg. The figures for the surface area of the capillaries per mg. of dry tissue were 42 sq. cm. for renal glomeruli, 20 sq. cm. for lung, and 9·4 sq. cm. for choroid plexus. A simple calculation based on these figures shows that the greater antigenic potency of the glomerulus is not due only to its greater vascularity, since per unit area of capillary bed it is about 10 times as active as choroid plexus and 40 times as active as lung. KRAKOWER and GREENSPON therefore suggest that the concentration of nephrotoxic material in a capillary wall may be related to the pressures it is normally called on to sustain and which are known to be highest in the renal glomeruli and lowest in the lung.

The restriction of lesions to the glomeruli after an injection of nephrotoxic serum is probably, therefore, at least partly due to its high concentration of specific antigen. A further important factor is the peculiar structure of the glomerular capillary endothelium, which, as is shown by electron microscopy,[10] permits the most intimate contact between the circulating plasma and the underlying basement membrane. This combination of factors undoubtedly underlies the extremely rapid and unique fixation of injected nephrotoxic sera by the glomeruli.[11]

It would be gratifying if the many facts now eludicated about experimental nephrotoxic nephritis could be applied to nephritis in man. That autoantibodies are involved in its pathogenesis[12 13] cannot yet be regarded as proven; but the association of glomerulonephritis with a preceding streptococcal infection suggests that the streptococcus may initiate an auto-immune process. That streptococci can convert haptens to complete antigens has been shown not only for blood-groups and other substances [14] but also for the nephrotoxic haptens obtained by digesting rat kidneys with trypsin.[15 16] It must, however, be emphasised that in these experiments the antigenic stimulus was still heterospecific—namely, rat into rabbit—and that experimental auto-immune nephritis has not yet been convincingly demonstrated.

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Fungicide by Mouth

THE fungi which cause ringworm in man are scarcely more than saprophytes: they live and multiply in what is virtually dead tissue—the keratin of the skin, the hair, or the nails. By an enzyme process they can digest, live on, and distort keratin; and their existence and persistence on human beings depend on their growing fast enough to avoid being cast off with the superficial keratin and slowly enough to escape the living, lethal cells below. These fungi are exposed to danger when they excite an inflammatory reaction, by which either they will be cast off or production of keratin will be disturbed. The less pronounced the reaction to a fungus in the skin, the more chronic the infection. A distressingly large number of preparations have been tried for the treatment of fungus infections: those that sometimes succeed do so by virtue of the reaction they produce; and in fact it does not seem rational to expect to kill a fungus by applying compounds which cannot get into the keratin. WILSON [1] defined the ideal antifungal agent as one which, safely administered internally, endowed the cells eventually destined to produce keratin with the power to resist fungi, this power persisting as the cells become keratinised. The first real step towards this ideal has followed from work in another field—the development of griseofulvin for use against fungal plant pathogens.

In 1946 BRIAN et al.[2] obtained an antibiotic known as "curling factor" from cultures of *Penicillium janczewskii*. These workers observed that "curling factor" caused the production of short, stunted germ tubes by *Botrytis allii* and that development of these germ tubes ceased at an early stage. Lower concentrations of the antibiotic caused excessive branching and distortion of hyphal growth, while at the threshold concentration of biological activity the fungal hyphæ exhibited a characteristic spiral curvature. Later GROVE and MCGOWAN [3] showed that the "curling factor" antibiotic was identical with griseofulvin, which had been isolated from *Penicillium griseofulvum* mycelium by OXFORD et al.[4] in 1939. Griseofulvin is a colourless, neutral, thermostable substance only very slightly soluble in water; its structure was elucidated by GROVE [5] et al. in 1952. In 1955 a group at Glaxo Laboratories found that, in vitro, griseofulvin was notably active against pathogenic skin fungi, the minimum inhibitory concentration in broth for a variety of species ranging from 0·1 to 0·4 μg. per ml. It was also found to have remarkably low acute toxicity when administered orally to animals in very large doses. This, coupled with its low water-solubility, at first suggested that absorption from the gut was negligible. But this year GENTLES [6] has shown that guineapigs experimentally infected with *Microsporum canis* and *Trichophyton mentagrophytes* responded quickly to small doses of griseofulvin (60 mg. per kg. body-weight daily) given by mouth; and calves infected with *T. verrucosum* have been successfully treated with orally administered griseofulvin.[7] Meanwhile studies with oral administration of ^{36}Cl-labelled griseofulvin have indicated good absorption and rapid excretion, while more recently griseofulvin has been detected in the hair of treated animals by extraction.[8]

There remains the problem of safety. Because of the drug's low acute toxicity, it has been possible to examine the effects of very large doses administered intravenously and intraperitoneally. PAGET and WALPOLE [9] found that administration to rats of griseofulvin in doses of 200 mg. per kg. body-weight intravenously and 2000 mg. per kg. intraperitoneally had a colchicine-like effect in temporarily arresting mitosis; this antimitotic effect was seen in the gut wall, testes, and bone-marrow. The relevance of this change, following very large parenteral doses, to clinical practice, in which much smaller doses are administered by mouth, is not certain. Similar toxic effects are found with drugs in common use when given in very large amounts. Dr. WILLIAMS and his colleagues, whose preliminary communication appears on an earlier page, administer the drug to patients in doses of 2 g. daily by mouth; and this dosage, which seems to be effective, has so far had no serious ill effects.

Many months will pass before griseofulvin can be reliably evaluated; but if in the end it proves to be as efficacious and safe as early experience suggests, it will represent a notable advance.

Food-poisoning

THE annual review of food-poisoning in England and Wales, prepared by the epidemiological laboratory of the Public Health Laboratory Service, is a document of some importance to hygienists. The total in the latest report [10] is slightly less than that for the previous year; but the figures show no startling change. Incidents for which no cause can be found still amount to about 40% of the total, and it is encouraging to learn that a hunt for unrecognised causes of food-poisoning is now in hand. Of the rest, incidents due to staphylococci and clostridia amount to no more than 3%, while those attributed to salmonellæ make up nearly 60%. Between these two there is a real distinction. Staphylococcal and clostridial food-poisoning is preventable in the sense that road accidents are preventable. If all who handle food would make sure that it is never held under conditions which allow bacterial multiplication (and hence the production of enterotoxins) toxic food-poisoning would be reduced to vanishing-point: it is a matter of the right equipment, intelligent discipline, and common sense.

About food-poisoning due to salmonellæ we still know curiously little, and certainly not enough to be complacent about its prevention. We are, in fact, at a point where intelligent guesses based upon analogy may be misleading. It is odd that the origin of some of the larger

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2. Brian, P. W., Curtis, P. J., Hemming, H. J. *Trans. Brit. mycol. Soc.* 1946, **29**, 173.
3. Grove, J. F., McGowan, J. C. *Nature, Lond.* 1947, **160**, 574.
4. Oxford, A. E., Raistrick, H., Simonet, P. *Biochem J.* 1939, **33**, 240.
5. Grove, J. F., MacMillan, J., Mulholland, T. P. C., Phorold Rogers, M. A. T. *J. chem. Soc.* 1952, 3977.
6. Gentles, J. C. *Nature, Lond.* 1958, **182**, 476.
7. Lauder, I. M., O'Sullivan, J. G. *Vet. Rec.* 1958, **70**, 949.
8. Gentles, J. C., Barnes, M. J., Fantes, K. H. *Nature, Lond.* (in the press).
9. Paget, G. E., Walpole, A. L. *ibid.* 1958, **182**, 1320.
10. *Mon. Bull. Minist. Hlth. Lab. Serv.* 1958, **17**, 252.

outbreaks—for example, that due to meat in Essex in 1946 or the milk-borne outbreak in Somerset in 1952[11 12]—seems pretty clear, but that the most careful investigation fails to reveal the source of the far more numerous minor outbreaks or sporadic individual infections. We know that some infections are derived from meat products, and notably from those which contain pig meat. We know, too, that the mesenteric glands of pigs have been found to be infected on many occasions and in many countries. Investigations here have, however, shown a lower incidence of infection in pigs than that found twenty years ago. Sampling of made-up meat products might usefully be pursued further. Pig meat eaten in this country amounts to many thousands of tons annually; but probably not more than 5 lb. is cultured for salmonellæ. Meat is not milk, and our ideas of sampling may be misconceived: there is no evidence that the salmonellæ are distributed evenly through a yard of salami. We know that bakers use large amounts of imported egg (dried or frozen), some of which teems with *Salmonella spp*. When reconstituted it is sticky and likely to pollute everything and everybody in the bakehouse. Has there been any extensive search for salmonellæ in bakery workers? If this is a dangerous source of infection there are no reasons (except trouble and cost) why this substitute for fresh eggs should not always be pasteurised: already it often is. Bone meal and fish meal of exotic origin have been shown to contain not only the everyday species of *Salmonella* but many rare and curious ones never seen before in this country. Both these substances are compounded in animal feedingstuffs to produce a flora which is sometimes quite alarming. Were all these species of *Salmonella* as pathogenic as our native strains we must surely have seen an appalling murrain in our flocks and herds. ROHDE and BISCHOFF[13] have demonstrated that, while these foreign species may be recovered from the fæces and organs of the animals to which they have been fed, they do not seem to cause obvious disease. The absence of disease may be associated with lack of exuberant bacterial multiplication. Nevertheless this imported animal matter is beyond much doubt the ultimate origin of some of the rarer species of *Salmonella* now found in England—though the route by which they infect man can be only guessed.

About the dose of salmonellæ necessary to cause disease we know almost nothing. It seems, however, that the infective dose for man of *S. typhi* is small compared with that of *S. typhimurium*, and possibly this in turn is much less than that of *S. charity* or *chittagong*. We know that not all species of *Salmonella* are equally infective for all species of animals. It is tempting to classify the genus into three groups. There are those, such as *S. typhi* or *S. pullorum*, which are specialised parasites of one species of animal: their infective dose is small and their virulence high. *S. typhimurium* is the type species of the second group, which includes most of those found commonly in animals and man: some—for instance, *S. thompson* and *S. choleræ-suis*—seem to have a preference for one host but can cause disease in many others. Different strains of a single species in this group may differ widely in virulence, but as a whole they seldom cause the septicæmic kind of infection common in the first group. The second group shades off indefinitely into the catalogue of romantic names in the Kauffman-White table which represent species of *Salmonella* found only once or very seldom. Since the published accounts of their discovery often omit the essential information, it is not easy to determine how many of these may cause disease, but at least some have been found only in reptiles or in the bowels of apparently healthy humans. Perhaps for reasons of geography they have not yet run riot under the eyes of the epidemiological laboratory. Perhaps they have been introduced to this country but have not established themselves, for reasons which we do not know; or perhaps they really prefer a saprophytic life in the bowel of a serpent on the banks of the Congo. As long as these and many other questions remain unanswered it would be foolish to suggest that any administrative acts will bring food-poisoning to an end.

11. Camps, F. E. *ibid.* 1947, **6**, 89.
12. McCall, A. M. *Lancet*, 1953, i, 1302.
13. Rohde, R., Bischoff, J. *Zbl. Bakt.* Abt. I, 1956, **159**, 145.

Annotations

G.M.C. CENTENARY

THE first meeting of the General Medical Council was held at the Royal College of Physicians of London on Nov. 23, 1858, under the presidency of Sir Benjamin Brodie. The centenary was marked by a dinner at the Mansion House on Nov. 27, when Sir David Campbell, the twelfth president, responding to a toast by the Lord Mayor, reviewed the state of the profession before and since the enforcement of the Medical Act of 1858.

In the first half of the 19th century the profession was in a state approaching chaos: it had no cohesion; it was torn by jealousies and competing interests; and some of its members were half-educated—in 1841 more than a third of the practitioners were unqualified. Simon, in 1858, painted an astonishing picture. Titles to practise were obtainable from twenty-one sources—including the Archbishop of Canterbury. There was irresponsible competition between licensing bodies, which had exclusive territorial powers in granting the right to practise: for instance, graduates of London University laid themselves open to prosecution by the Royal College of Physicians. There were several pharmacopœias with no standard. For help, later, in devising the *British Pharmacopœia* the Council was greatly indebted to the pharmaceutical profession.

The G.M.C. was the first statutory tribunal of a registered profession required to exercise quasijudicial functions; and overseas too, Sir David said, the Council had exercised a helpful influence in setting standards. (Earlier in the day, as we report on p. 1222, he had welcomed to the Council's centenary session representatives of Commonwealth countries and of Burma.) At home it had helped to create the profession of dentistry, which long remained in its purview; but lately the General Dental Council had been established as the mirror-image of the G.M.C.

Under the first Medical Act the Council's powers were indicated rather than defined; but, though these powers were scanty, great things had been achieved in the century. Referring to earlier leaders in the Council, including Brodie, Sir Donald MacAlister, and Sir Herbert Eason, he said: "We are their debtors for their ideal and their example."

Lord Cohen of Birkenhead observed that, through the G.M.C., the Governments of Great Britain, Northern Ireland, and Eire met for a common purpose. Reciprocity in registration and temporary registration was one of the most abiding links of friendship with the Commonwealth.

The history and present work of the Council are related in a booklet by the Registrar, Mr. Walter Pyke-Lees (*Centenary of the General Medical Council, 1858–1958*).

SEX AND AGE DIFFERENCES IN RADIATION-INDUCED MUTATION-RATES

A RATHER unexpected finding of the recent surveys of man's exposure to artificial radiation was that the main source was clinical radiography. Such radiation was a much more important source of exposure of the gonads, in countries where X rays were much used medically, than, at any rate, the external radiation from atomic and thermonuclear devices so far exploded. Efforts, therefore, are now being made to reduce gonad exposure to medical X rays. For these efforts to be well directed it is important to know whether it is men or women who particularly need protection—by, for example, such devices as the 'Armadillo', recently described in our columns [1]—and to know whether mutation is particularly likely after exposure in fœtal, child, or adult life.

Experiments in animals and plants show that radiation-induced mutation-rates may vary greatly, not only between male and female but also between different stages in the maturation of the germ cells in the same sex. In man there is no evidence yet on radiation-induced mutation-rates, and no evidence even about spontaneous mutation-rates for each sex separately. Haldane [2] has pointed out that the family patterns for conditions due to sex-linked mutations may provide evidence on the relative rates of spontaneous mutations; but no conclusive differences have yet been found by this method. Spontaneous mutation-rates, too, are of only limited value in estimating the relative rates of radiation-induced mutation, since much, perhaps most, spontaneous mutation is not due to background mutation. Accordingly, Carter [3] has designed and performed experiments on radiation-induced mutation-rates by sex and age in the mouse, the most suitable mammal for studies of this kind.

In mammals the germ plasm in females is present in oogonia in fœtal life, and mainly in oocytes in postnatal life. In males the germ plasm is present in spermatogonia in fœtal life, and also in spermatogonia for most of postnatal life, the stages of spermatocyte and spermatozoon lasting, perhaps, only about a year. In mice the mutation-rates for a number of gene-loci have already been established for adult males in America by Russell. Using Russell's strains of mice, Carter looked for mutations in the offspring of irradiated fœtal male mice and adult female mice. With the fœtal male mice he was able to follow Russell's method closely, using high-voltage X rays for a short period, though to avoid fœtal damage the total dose was 300 and not 600 rads. This technique was useless in adult females, since they were largely sterilised; so he used the same total dosage of 600 rads, but gave it by gamma-radiation over seven weeks. There is no reason to suppose that the lower dosage to the fœtal male mice would affect a comparison with Russell's findings. The comparability of the effects of X-radiation in a little over an hour with the same dose as gamma-radiation over some weeks is uncertain, but may well be valid.

Carter's findings were surprising. With a little over 10,000 offspring in each group he would have expected, if Russell's findings on adult males applied, between 11 and 12 mutations in the offspring of the irradiated adult females, and 6 in those of the irradiated fœtal males. In fact, only 1 mutation was recognised in each group. It is clear that these results need repeating with, if possible, different mammals and different techniques of irradiation. In particular, the question of the comparability of the same dose given at a high rate over a short period, and at a low rate over a long period, needs further investigation. But Carter's findings already suggest that it is the post-natal male who particularly needs protection from irradiation of the gonads during radiography. It will be fortunate if this proves to be the case, since it is just this group that is most easily protected.

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3. Carter, T. C. *Brit. J. Radiol.* 1958, **31**, 407.

THE PROPERDIN SYSTEM

SPECIFIC antigen-antibody reactions are not the only system of immunity in the body. A globulin fraction has been demonstrated in human serum which contributes to the destruction of bacteria of the shigella group, abnormal red blood-cells, and the inhibition of certain viruses.[1] Properdin is a β-euglobulin with a high molecular weight; it represents no more than 0·03% of total serum-proteins. It is active only in a system which invokes complement and magnesium ions, and differs from the usual antigen-antibody system in its lack of specificity and its ability to inactivate the C'3 component of complement—a component only partly affected by antigen-antibody reactions. This provides the basis for properdin assay: zymosan, consisting of purified cell walls obtained after tryptic digestion of yeast, forms an insoluble polysaccharide complex with properdin, which may thus be removed from serum; a unit of properdin is defined as the smallest amount then required to reduce the C'3 titre in properdin-deficient serum from 120 to 0 units.[2]

The importance of the properdin system lies in its lack of specificity and therefore wide range of defence. Besides shigella, some strains of salmonella, pseudomonas, proteus, paracolon bacilli, and escherichia are properdin-sensitive.[3,4] A relationship has been shown between survival and properdin levels in mice infected with *Esch. coli* and Friedländer's bacillus; moreover intravenous administration of properdin altered the course of the infection.[4] Rowley [5] has injected mice with cell walls prepared from *Esch. coli* and demonstrated that the animals then die after being infected by as few as 5 *Esch. coli*, whereas as many as 10,000 organisms may be needed to kill normal animals. This suggests that bacterial cell walls remove properdin just as zymosan does, the corollary being that the properdin system protects by combining with such substances.

1. Pillemer, L., Blum, L., Lepow, I. H., Ross, O. A., Todd, E. W., Wardlaw, A. C. *Science*, 1954, **120**, 279.
2. Pillemer, L., Blum, L., Lepow, I. H., Wurz., L., Todd, E. W. *J. exp. Med.* 1956, **103**, 1.
3. Wardlaw, A. C., Pillemer, L. *ibid.* p. 553.
4. Pillemer, L. *Trans. N.Y. Acad. Sci.* 1955, **17**, 526.
5. Rowley, D. *Lancet*, 1955, i, 233.

In-vivo injections of zymosan cause a fall in serum-properdin, but the titres rise after two days to two to three times normal. This phenomenon has been used to protect laboratory animals against the septicæmia which follows irradiation; and it is significant that properdin levels fall after whole-body radiation [6] and irreversible hæmorrhagic shock [7] and such falls are accompanied by loss of resistance to infection and to endotoxins. Serum-properdin titres tend to be subnormal in man in association with infection and after gross tissue destruction.[8] Pillemer et al.[9] have shown that in mice polysaccharides of high molecular weight derived from normal and neoplastic tissue combine with properdin, thus altering serum levels and resistance to gram-negative infections; this observation, amplifying the findings in man, points to endogenous causes of lowered immunity. We already have one example of possible endogenous utilisation of the properdin system in paroxysmal nocturnal hæmoglobinuria; for in this condition, which brings into action no antibody reaction, properdin is found to be necessary for lysis in vitro. Hubay et al.[10] have designed experiments to find out whether the properdin system accounts for the failure of homografts, since the development of antibodies to skin homografts has not been demonstrated. But skin-homograft survival was not prolonged by depressing the properdin system, nor were renal homografts affected.[11] It is interesting that Hubay et al. achieved depression of serum-properdin by injecting dextran B1355; this finding may point to a need for caution regarding the use of dextran therapeutically as a blood substitute.

TREATMENT OF THE NEPHROTIC SYNDROME

IN the absence of an ætiological diagnosis, treatment of the nephrotic syndrome is necessarily empirical. The very multitude of remedies encourages the view that none is specific. It was early observed that spontaneous diuresis occasionally accompanied pyrexia; and artificial fever, produced either with T.A.B. or malaria, has been used successfully in some cases. Diuretics are commonly prescribed with no aim other than to reduce œdema, and administration of urea sometimes does this dramatically. Restriction of dietary sodium is widely practised, and is a logical way of preventing further accumulation of extracellular fluid.

But none of these treatments aims at correcting the underlying cause of the œdema—namely, the reduced colloid-osmotic pressure of the blood—or at increasing the low plasma-volume, which is the probable stimulus to increased aldosterone secretion by the adrenal. Such attempts as have been made to expand the plasma-volume have usually been unsuccessful,[12] but a recent case reported by Williams and Ryan [13] is a noteworthy exception. These workers induced diuresis in a nephrotic by means of intravenous infusion of concentrated human serum-albumin after they had failed with steroids. The diuresis, which was accompanied by increased urinary excretion of protein, signifying that the renal lesion was unaffected, may well have been the result of reduced adrenal stimulation from increased plasma-volume.

It is widely recognised that the nephrotic syndrome can be effectively treated only by correcting the cause of the proteinuria; but in only occasional cases is the cause known with certainty, and even more rarely can a specific remedy be applied.[14] In most cases of acquired nephrotic syndrome which are not due to poisoning by drugs or metals the lesions are glomerular. The only drugs which seem to affect the glomerulus directly are the steroid hormones, and their usefulness can hardly be exaggerated. These hormones may also act indirectly by reducing the secretion of aldosterone by the adrenals. They have been administered in two ways—either in short intensive courses when a withdrawal diuresis was planned, or else as continuous medication when it was hoped that some direct glomerular effect was being induced. Continuous therapy is complicated by side-effects and often has to be abandoned on this score. Clearly some cases—for instance, due to renal-vein thrombosis—will not be directly influenced by steroid hormones. In others—for example, systemic lupus erythematosus—the hormones may well act directly on the glomerulus. Short courses might suit the former type, and long-continued therapy the latter. The debate continues, and a report by Lange and Wasserman [15] is particularly welcome as it indicates a logical compromise.

These workers report on 46 cases of nephrosis (35 children and 11 adults), having specifically excluded those caused by renal-vein thrombosis, amyloidosis, or diabetic nephropathy. The series includes all their cases of so-called pure or lipoid nephrosis, and of the nephrotic stage of glomerulonephritis. Whether there is a "pure lipoid nephrosis" is undecided,[14] but from the clinical and chemical data presented it is clear that all were examples of the nephrotic syndrome. Treatment was begun with aqueous corticotrophin for at least twelve days, and prolonged intermittent therapy with cortisone was then applied—the œdema disappearing in consequence. This treatment, which was started five days after the onset of the diuresis, consisted of cortisone orally for three days of each week for at least a year, regardless of clinical or chemical improvement. After a year the interval between maintenance courses was extended, and finally cortisone was withdrawn completely. Antibiotics and a potassium supplement were also given, and a diet containing less than 1 g. of salt daily was recommended. Fluid intake was not restricted. A control series was ingeniously selected from a group of nephrotics observed between 1946 and 1952, after the introduction of antibiotics but before steroids were widely available. A remarkable difference was demonstrated in the treated group. Instead of the 12·8 predicted deaths only 1 occurred in the first sixty months of observation. Moreover, most of the adults in the treated group were able to lead normal lives, and the children grew and behaved normally. No harmful side-effects were seen. Other investigators [16] have reported similar good results. In the present state of our knowledge this seems to be the treatment of choice for the nephrotic syndrome.

MR. PERCY HODDER-WILLIAMS

WE regret to record the death of Mr. R. P. Hodder-Williams, for twenty-one years chairman of *The Lancet*. In 1927 he succeeded his elder brother, Sir Ernest Hodder-Williams, as the senior member of our board of directors, and also as chairman of the publishing firm of Hodder & Stoughton. In both offices he had to cope with the added difficulties of the war, and in both he is remembered with affection and respect for his qualities of heart and mind. He died on Nov. 29 at the age of 78.

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12. Edwards, G. A. *Lancet*, 1957, **i**, 563.
13. Williams, R. S., Ryan, T. J. *ibid.* Nov. 8, 1958, p. 988.
14. *ibid.* p. 1000.
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Special Articles

CLINICAL IMPORTANCE OF THE OBSESSIONAL PERSONALITY

ALECK FOLKSON
M.D. Lond., D.P.M.
CONSULTANT PSYCHIATRIST, ST. FRANCIS HOSPITAL, HAYWARDS HEATH, SUSSEX

IN many patients referred to hospital with symptoms secondary to tension no obvious psychopathology is elicited but the personality is obsessional.

A clear distinction must be made between the obsessional personality and the obsessive-compulsive neurosis. It is true that people with obsessive-compulsive neurosis usually have an obsessional personality, but only a small proportion of people with obsessional personalities have a compulsive neurosis. Obsessive compulsive disorders form a small clear-cut group, presenting with compulsions or obsessional ruminations which are disturbing to the patient and are manifestations of a neurosis. The obsessional personality is far commoner, does not present as a neurosis, and is found among "normal" people. Few members of the community will not show some of the traits it comprises, and it is only by the number and strength of these traits that the obsessional group is recognised.

Patients referred to hospital do not complain of their personality, which they accept quite happily: in fact, by various rationalisations, they defend themselves against any attack on their mode of living. They attend hospital because they are always on edge, are "highly strung", worry excessively, cannot relax, are readily upset by minor events, or easily become depressed. Their personality seldom emerges without direct questioning, but its assessment is important because treatment directed towards it is often very rewarding.

THE OBSESSIONAL

An excellent description of obsessionals was given by Mayer-Gross et al.[1] They are precise careful people—reliable, meticulous, punctual, tidy, conscientious (if not overconscientious), in speech pedantic and conservative. They have a sense of tension if they are behind with their work; they dislike changes, and may panic at the unexpected, attempting to order their life against such contingencies; in their search for certainty and order they become creatures of habit—rigid, unadaptable personalities. Nobody has all these traits, and almost everybody develops one or two of them, if only to render the business of modern living somewhat easier. William James[2] wrote of the social significance of habits:

"Habit is thus the enormous flywheel of society, its most precious conservative agent."

"If practice did not make perfect, nor habit economize the expense of nervous and muscular energy, he would be in a sorry plight . . ."

Obsessionals are recognised by employers as "the salt of the earth"—dependable and working at their best when unsupervised. Perfectionists, always giving of their best, they excel as craftsmen.

These people set themselves standards so high that they can never be achieved without anxiety. Insecure, they worry about the future and tend to be careful with money. The heightened conscience of this group was described by Freud[3] in his theory of the development of the super-ego, in which he described the miserliness and associated this with anal preoccupation and sadistic tendencies.

Most psychiatrists in this country, though they accept these observations, would not agree with the interpretation.

Obsessionals with an energetic temperament tend to be much less disturbed: they *can* keep up with their work, their drive overcomes their rigidity, and their capacity for attention to detail and accumulation of data is often highly successful in business. It is obsessionals who lack enough drive to reach their too high goals who develop tension and anxiety. Competition is an important factor in the culture of Western societies: hence the excessive use of tranquillisers, though these never give permanent relief. Karen Horney[4] points to the contradiction between competition and success on the one hand, and brotherly love and humility on the other; between the stimulation of our needs and our factual frustrations in satisfying them; between the alleged freedom of the individual and all his factual limitations. Adler[5] also laid stress on sociological difficulties—the tendency towards a goal of superiority, transformed into hostility by the possession of feelings of inferiority.

Shorvon,[6] investigating 66 cases of depersonalisation, found that this was often related to obsessional traits and to migraine. It was associated with relaxation following intense or prolonged stimulation. In all cases of migraine it is important to assess and treat the personality, similarly it is useful to ask obsessional patients about headaches and depersonalisation. The latter experiences are often withheld for fear of being thought insane.

The fact that the obsessional personality often runs in families is sometimes ascribed to indoctrination in childhood. But the quite different response of children subjected to the same process suggests that there are constitutional factors, or other unknown causes.

TREATMENT

When treatment is necessary, an attempt should be made to influence the personality by teaching and exhortation rather than by deep analysis. The patient is shown the relation between his symptoms and his personality; and for this purpose it is fortunate that many people in this group have intelligence above the average.

In the first sessions, when patients can see no wrong in their normal selves, analogy and anecdote are very useful. We may, for example, tell the patient that, when a large television mast is erected it is balanced on a large ball-bearing to take the stresses of high winds. If it were rigidly fixed there would be a danger of snapping; and human beings are similar in their need to sway with life and to adapt to changes let alone emergencies—though, surprisingly enough, many patients cope better with these than with trivialities. The need is to "let go" rather than follow the advice of well-meaning relatives to "pull themselves together". For the obsessional a variation of an old phrase is useful—"Why not put off until tomorrow what does not have to be done today". He may be asked to clench a fist tightly, and in a few moments will find himself with pain in the forearm due to muscular tension.

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3. Freud, S. The Ego and the Id. London, 1927.
4. Horney K. The Neurotic Personality of Our Time. London, 1937.
5. Adler, A. The Practice and Theory of Individual Psychology. London, 1929.
6. Shorvon, H. J. *Proc. R. Soc. Med.* 1946, **39**, 779.

A major essential is a reduction of excessively high standards, except in matters of necessity and special importance: within a normal life perfection cannot be attained and maintained without loss of perspective. The man who fusses because his boy has not put the towel straight in the bathroom, and develops an attack of migraine, can choose between having migraine and having a house that looks like a home. Husbands and wives, in particular, are liable to come into conflict if they differ markedly in their standards, and they have to learn to tolerate standards other than their own. Dramatic changes from such advice cannot be expected: reorientation of fixed attitudes is at best a slow process, and to prevent discouragement the patient must be told this at an early stage.

The centre path in life leads to peace and content. Too little or too much is usually unhealthy, whether it be discipline (internal or external) or freedom, love or hate, aggression or submissiveness, elation or sadness, apathy or overactivity. Jung [7] has described this middle position —as recommended in the Brahmanic and Chinese religions—as a conscious attempt to find release from the pairs of opposites (*nirdvandva*) so as to gain the path of redemption. This is a psychological doctrine of salvation which brings the way of deliverance within the compass of human intention.

MEDICAL SERVICES REVIEW

THE Medical Services Review Committee held its first meeting on Nov. 27. Its task is

> "To review the provision of medical services to the public, and their organisation, in the light of ten years' experience of the National Health Service, and to make recommendations."

Sponsored by the Royal Colleges and the Scottish Royal Medical Corporations, the Society of Medical Officers of Health, the College of General Practitioners, and the British Medical Association, it has the following membership:

Sir ARTHUR PORRITT, F.R.C.S. (chairman); Dr. THOMAS ANDERSON (Glasgow); Dr. W. FERGUSON ANDERSON (Glasgow); Dr. J. T. BALDWIN (Midlothian); Dr. I. R. C. BATCHELOR (Dundee); Sir HAROLD BOLDERO, F.R.C.P. (London); Mr. W. S. BRAIDWOOD, F.R.C.S. (Co. Down); Mr. ROGER BREARLEY, F.R.C.S. (Liverpool); Prof. JOHN BRUCE, F.R.C.S.E. (Edinburgh); Dr. H. D. CHALKE (London); Prof. A. M. CLAYE, F.R.C.O.G. (Leeds); Mr. EDWARD COPE, M.R.C.O.G. (Birmingham); Dr. A. D. DAVIES (Walsall); Dr. T. B. S. DICK (Wigan); Miss A. M. DICKINS, F.R.C.O.G. (London); Dr. JOHN FRY, F.R.C.S. (Beckenham); Dr. A. RAE GILCHRIST, F.R.C.P.E. (Edinburgh); Dr. I. D. GRANT (Glasgow); Dr. C. F. HAWKINS (Birmingham); Mr. WILLIAM HAWKSWORTH, F.R.C.O.G. (Oxford); Mr. R. G. HENDERSON, F.R.C.S.E. (Falkirk); Dr. JOHN HUNT (London); Mr. ARTHUR JACOBS, P.R.F.P.S. (Glasgow); Dr. A. M. MAIDEN (Lincoln); Mr. D. F. ELLISON NASH, F.R.C.S. (London); Dr. IAN RANNIE (Newcastle upon Tyne); Prof. T. FERGUSON RODGER, F.R.C.P.E. (Glasgow); Dr. J. M. ROGAN (London); Mr. J. A. ROSS, F.R.C.S.E. (Edinburgh); Sir JAMES PATERSON ROSS, F.R.C.S. (London); Mr. T. HOLMES SELLORS, F.R.C.S. (London); Dr. GEORGE SWIFT (Winchester); Sir TUDOR THOMAS, F.R.C.S. (Cardiff); Dr. J. B. TILLEY (Newcastle upon Tyne); Dr. F. G. TOMLINS (London); Dr. SOLOMON WAND (Brimingham); and Prof. R. C. WOFINDEN, M.D. (Bristol).

The secretary of the committee is Dr. D. P. Stevenson, secretary of the British Medical Association, who may be addressed at B.M.A. House, Tavistock Square, London, W.C.1.

7. Jung, C. G. Psychological Types. London, 1920.

HEALTH AND WELFARE UNDER THE GENERAL GRANT

UNDER the Local Government Act of 1958 authorities are in future to receive the Exchequer's contribution to their finance in the form of a general grant instead of percentage grants for specific services. The Act requires that the amount of the grants shall be announced in advance for periods of at least two years. The Government have now laid before the House of Commons their proposals for the years 1959–60 and 1960–61.[1] During 1958–59, the last year of the old system, the local authorities expect to spend £644·1 million, towards which the Exchequer will contribute £363 million (or 56·4% of their expenditure) in specific grants. For 1959–60 their estimated expenditure is £707·8 million, towards which the Government will give a general grant of £393 (55·5%); for 1960–61 their expenditure is estimated at £744·3 million and the proposed general grant will be £414 million (55·6%).

These figures are intended to allow for further development in the local-authority services, including health services.

As they have accepted the recommendations of the Royal Commission on the Law relating to Mental Illness and Mental Deficiency, the Government expect that greater responsibility for the care of the mentally ill will fall on the local authorities, and the estimates are intended to allow an annual rate of development in these services in 1959–60 and 1960–61 at roughly two and a half times the rate which has obtained in recent years. As needs which have been made urgent by the shift of emphasis from institutional to community care, the white-paper specially mentions residential accommodation in homes and hostels for patients who may need residential care but no longer need treatment as inpatients and more occupational and training centres for children and adults, including some residential centres.

Another service which it is hoped will expand is the domestic help service, and here the Government have budgeted for an increase in expenditure over the 1958–59 level of 8·5% in 1959–60 and 13% in 1960–61. This would permit the number of staff employed to rise from about 22,000 at Dec. 31, 1958, to 24,500 by Dec. 31, 1960.

The estimates also allow for improved or additional welfare centres for mothers and young children; an increase in the numbers of midwives, health visitors, and home nurses; the extended poliomyelitis vaccination programme announced in July; and more homes for the aged and infirm.

Expenditure on welfare services for the handicapped does not at present attract Exchequer help, but, in view of the Piercy Committee's recommendations, the Government have agreed to contribute to the cost of their development, and allowance has been made for this in the new general grant. Their contribution is intended to provide services by Dec. 31, 1960, for an additional 5000 (4·3%) blind and partially sighted persons, an additional 3000 (9·5%) deaf and hard-of-hearing persons, and an additional 16,000 (25·5%) persons handicapped for other reasons.

The child-care services are to be expanded in proportion to the expected increase in the population under 18. Allowance has also been made for additional help for foster parents, so that more children may be boarded out, for replacing large and unsuitable homes by small family-group homes, and for securing that the service is adequately staffed.

A separate white-paper [2] sets out the arrangements for Scotland, where in 1959–60, of a total grant of £80 million, some £5,600,000 will go to the health services, and in 1960–61, of a total of £83 million, some £5,700,000.

1. H.M. Stationery Office. 1958. Pp. 10. 9*d*.
2. H.M. Stationery Office. 1958. Pp. 4. 4*d*.

RICHARD BRIGHT CENTENARY

THE first scientific investigator of renal disease, Richard Bright, of Guy's Hospital, died on Dec. 16, 1858; and on Monday his hospital marked the centenary by a combined round and the Bright Memorial Lecture. The lecturer was Prof. M. L. ROSENHEIM, and Prof. ROBERT PLATT, P.R.C.P., was in the chair.

Describing the syndromes of Bright's disease, Professor Rosenheim spoke of the fantastic changes that had taken place between the days when the coagulability of urine was demonstrated by boiling in a spoon and the arrival of the pressurised-column chromatograph, which elegantly identified the excretion of aminoacids. He regretted that the name "disease" had stuck for what was in fact a group of syndromes. "Bright's disease" gave the student a false impression of unity—an impression not always dispelled by the complicated classifications devised by clinicians and pathologists. It was now clear that there was no close correlation between disordered function and pathological findings. The picture of acute glomerular damage, seen typically in acute glomerulonephritis, could be simulated, for example, by the embolic lesions of subacute bacterial endocarditis, by polyarteritis, and sometimes by radiation damage.

Many of Bright's patients probably had what would now be called the nephrotic syndrome. The association of nephrosis with certain drugs, such as mercury and troxidone, had suggested that a chemical or metabolic cause might be uncovered more often. Professor Rosenheim was at a loss to put a reasonable pathological explanation to the recurrent nephrotic episodes which in some patients extended over many years. Chronic nephritis, he thought, was a bad term to use without reservation for the syndrome of hypertension and renal failure. It should be restricted to those patients who had had acute nephritis or the nephrotic syndrome. Chronic pyelonephritis, now identified as a common cause of hypertension and renal failure, was often associated with a congenital or acquired abnormality of the renal tract; and Professor Rosenheim emphasised the importance of excluding, by thorough investigation, unilateral renal disease, from pyelonephritis or other cause, as a reason for hypertension. He had been impressed by the increasing number of instances in which renal disease, unilateral or bilateral, was discovered in fully investigated cases of hypertension. Aortography, by displaying the renal arterial tree and the kidney outline, was a valuable aid in such investigation, but it should not be undertaken without clear indications.

The three cases discussed at the combined round illustrated the scope of the term Bright's disease: Dr. W. N. Mann and Dr. K. D. Allanby presented a case of malignant hypertension; Dr. Christopher Hardwick's patient showed the relationship between obesity, diabetes, and albuminuria; and Dr. Kenneth MacLean's patient had an as yet unidentified condition which prompted a discussion on pyelonephritis and amyloid disease, among other things.

Presiding at a dinner in the Royal College of Physicians the same evening, Dr. A. C. HAMPSON spoke of the quiet way in which Bright made his contribution to Medicine. Perhaps he was not a "brilliant" man; but brilliance is merely an effect of light impinging from outside. To have worked at Guy's in the wards of Bright and Addison and Hodgkin—those scholar physicians—had been for Dr. Hampson a source of happiness and pride. Dr. E. R. BOLAND recalled Bright's association with the college, where he was twice censor. He also recalled some of the attacks on Bright and his hospital by Thomas Wakley of *The Lancet*. To these attacks, in thirty years, Bright made no reply; but he had the last word when *The Lancet* in 1858 published its obituary tribute. Prof. D. M. DUNLOP looked back to Bright's earlier years in the wind and the rain of Edinburgh, to which he later returned to take his M.D., as Addison did after him. To use a phrase now out of fashion, Bright was a gentle man. His life showed simplicity, magnanimity, compassion, and equanimity under stress.

GENERAL MEDICAL COUNCIL

IN a presidential address to the Council at its centenary session on Nov. 27 Sir DAVID CAMPBELL recalled that at the meeting in June two important tasks were completed. The first was the adoption of a completely revised Notice for the Guidance of Medical Practitioners in place of the Warning Notice which had formerly been issued. The second was the making of new Rules of Procedure to replace the original rules made in 1951 before the Disciplinary Committee had acquired experience of hearing cases. The most important change was in the rule relating to the reception of evidence, which had been clarified and revised in accordance with the views expressed by the Judicial Committee of the Privy Council in the case of Ong Bak Hin.

The Medical Act, 1956, by which all the earlier Medical Acts were consolidated, had itself been amended by the passage on Aug. 1 of a further Act which made three welcome changes in the law. The most important of these simplified the procedure for obtaining provisional registration by providing that an applicant need no longer produce to the Council evidence that he had been selected for employment in a hospital. Another section related to the experience required for full registration in certain exceptional cases. The third change effected by the Act was not suggested by the Council, but was not for that reason less welcome to them. Section 3 provided that the approval of the Treasury should no longer be required to the fees, expenses, and allowances payable to members of the Council.

In welcoming guests from Commonwealth countries, and from one foreign country—Burma—with which the Council has reciprocity, the President spoke of the special relationship with these countries.

Reciprocity began with the Medical Act of 1886 which authorised Her Majesty to declare by Order in Council that part II of the Act henceforth applied to any "British possession" or foreign country which in her opinion afforded to the registered medical practitioners of the United Kingdom "such privileges of practising in the said British Possession or foreign country as to Her Majesty may seem just". After such an Order had been made, the General Medical Council could legally recognise any medical qualifications granted in the country concerned, provided the Council were satisfied that the qualification furnished sufficient guarantees of professional proficiency. Each individual applicant had also to satisfy certain further conditions, including the condition that he must be legally entitled to practise in the country where he had qualified.

Unfortunately, as matters stood the Council was legally unable to recognise the licence granted by the Medical Council of Canada. The President looked forward to the day when full reciprocity, which seemed almost in sight after the end of the first world war, would be established. At present many British-qualified practitioners desiring to practise medicine in one of the Provinces of Canada with which the Council had no reciprocity took the examinations of the Medical Council of Canada as a means to registration in the Province of their choice.

BRITISH PHARMACOPŒIA

Dr. H. GUY DAIN, presenting the report of the Pharmacopœia Committee, said that the new edition of the *British Pharmacopœia* was selling well, though not so well, so far, as the previous edition at the corresponding stage. The new chairman of the commission, Prof. E. J. Wayne, had stated that the establishment for the work of preparing the next *Pharmacopœia*, and an *Addendum* to the present edition to be published in about two and a half years, was practically complete. Dr. Dain pointed out that the small number of persons appointed by the Council to draw up the *Pharmacopœia* could not possibly provide the variety of knowledge necessary to weigh accurately all the problems entailed, and that many others had therefore to be recruited from outside the commission to help with the work. It was not the sort of work that people were very anxious to undertake, but most of the invitations issued had been accepted.

EXAMINATION RETURNS

Prof. R. J. BROCKLEHURST (chairman) presented the report of a special committee appointed last June to review the method of reporting the annual examination returns. This contained recommendations for simplifying the form in which licensing bodies are required under the Medical Act and standing orders to give information on the examinations held by them for registrable qualifications; and corresponding simplification of the form in which this information is reproduced for the Council. The Council approved the new procedure, the PRESIDENT pointing out that it represented a considerable improvement, and that it could still be changed, if necessary, in the light of experience.

COMMONWEALTH AND FOREIGN REGISTRATION

The Council approved the President's action in having asked the existing Committee on Commonwealth and Foreign Registration, which had been considering applications for temporary registration, to deal also with applications under the new Act from persons who had had previous medical experience in other countries, or who had qualified in this country before 1953 but had not registered. Authority was given for the amendment of standing orders accordingly.

EXAMINATIONS IN HONG KONG

The Council considered in camera the question of special arrangements with the Society of Apothecaries of London for holding examinations in Hong Kong.

Medical Disciplinary Committee

The committee met on Nov. 25 and 26, under the chairmanship of the President.

OLD CASES

William David Smith, registered as of 118, Marlborough Park Central, Belfast, M.B. Belf. (1940), had had judgment postponed for a year following convictions in 1956 and 1957 for being in charge of a motorcar when under the influence of drink or drugs. Dr. Smith said he had taken up an assistantship, which he had held from May 19 to the present time. The Chairman announced that the committee were not satisfied that the evidence so far received would warrant them in discharging the case at present, and they had therefore determined to postpone judgment for a further six months.

In view of what the Chairman described as "very satisfactory information" which had been received concerning the conduct of *Robert Cremona*, registered as of Westminster Bank Ltd., 1, Bath Road, Hounslow, Middlesex, M.B. Camb. (1951), against whom judgment had been postponed for a year, the Registrar was not directed to erase his name.

Although the committee last November postponed judgment for two years, with an interim appearance at the present session, in the case of *John Miller Hunter Mitchell*, registered as of 96, Spottiswoode Street, Edinburgh, 9, M.B. Edin. (1940), they decided to make a decision at once, following a plea by Mr. Peter Baylis, solicitor, of Messrs. Hempsons, as solicitors to the Medical and Dental Defence Union of Scotland. Mr. Baylis said that throughout the past year Dr. Mitchell had been receiving psychiatric advice. After deliberation in camera, the Chairman announced that the committee had determined that the Registrar should not be directed to erase Dr. Mitchell's name from the Register by reason of the convictions proved against him, and that concluded the case.

Joseph Adewunmi Ademiluyi, registered as of 195, Harrow Road, London, W.2, M.R.C.S. (1951), was charged with having been convicted on Dec. 9, 1957, at the Central Criminal Court on indictment of using an instrument with intent to procure an abortion, when he was sentenced to four years' imprisonment, which was reduced, on appeal, to eighteen months' imprisonment. The inquiry was adjourned last May in view of a medical certificate that the practitioner was unfit to travel.

Dr. T. D. Elias, appearing for Dr. Ademiluyi, drew attention to the fact that, in the Court of Appeal, in reducing the sentence the Lord Chief Justice stressed that on the evidence and in the circumstances surrounding the case he was quite sure that Dr. Ademiluyi was not a practising abortionist.

The Chairman announced that by reason of the conviction the Registrar had been directed to erase from the Register the name of Joseph Adewunmi Ademiluyi. This is subject to notice of appeal being lodged within twenty-eight days.

William Frank Cruickshank, registered as c/o Milne, Broxy Cottage, Westmuir, Brechin, Angus, M.B. Glasg. (1935), appeared on charges of having been convicted in 1954 in Coventry of being drunk and disorderly, and of infamous conduct in a professional respect in having failed without reasonable cause to visit patients when he had undertaken to provide general medical services under the National Health Service.

Mr. Widgery recalled that the inquiry was held in May, 1954. The charges arose out of Dr. Cruickshank's drunken habits when he was in practice in Brechin, which caused him to neglect his patients and his practice. The committee decided to postpone judgment until May of the following year, and then were not satisfied with the information provided and further postponed judgment until May, 1956. In January, 1956, Dr. Cruickshank was convicted for driving under the influence of drink, and in May, when the inquiry was resumed, the committee decided to postpone judgment further until the July session, as he has not then present. In July, 1956, Dr. Cruickshank was present and was given another opportunity to rehabilitate himself. In May, 1957, he appeared again, but the committee decided on yet another postponement, until June. He was present in June and was informed that the committee were still not satisfied with the evidence as to his habits and conduct and that he would have one further opportunity—and the Chairman emphasised the "one further opportunity"—of presenting evidence as to his conduct.

The Chairman announced that after careful consideration of the testimony as to Dr. Cruickshank's conduct which had been produced the committee had recorded a finding that Dr. Cruickshank was not guilty of infamous conduct in a professional respect in relation to the second charge, and that they had also determined that the Registrar should not be directed to erase his name from the Register by reason of the conviction.

James Watson Richmond, registered as of Culsamund Old Manse, Insch, Aberdeenshire, M.B. Glasg. (1929), had had judgment postponed for two years in May, 1956, following a conviction for assault against a woman and of conducting him-

self in a disorderly manner. In May, 1957, the committee noted with satisfaction the letters received, but in June, 1958, they considered the evidence did not warrant them in discharging the case.

Mr. Widgery read a letter from Dr. Richmond in which he said: "I regret I am unable to attend as I am out of employment and have not the means to travel down to London at present".

The Chairman announced that the committee were still not satisfied that the evidence so far received would warrant them in discharging the case. They had therefore determined to postpone judgment for a further six months. Before that date Dr. Richmond would again be asked to supply the names of professional colleagues and other persons of standing to whom the Council could apply for information. "And would you impress on Mr. Richmond the importance of this decision?" added the Chairman.

REINSTATEMENT

The Registrar was directed to restore to the Register the names of *Kenneth Leopold George Nobbs* and *Ebenezer Francis Thomas*.

NEW CASES

William Ronald Pitt, registered as of 69, Hollyfield Road, Sutton Coldfield, Warwickshire, M.B. Belf. (1942), admitted having been convicted at Warwick Assizes of obtaining £135 by false pretences and obtaining credit by fraud, for which he was sentenced to twelve months' and six months' imprisonment respectively, to run concurrently.

Mr. G. J. K. Widgery, solicitor to the Council, said that Dr. Pitt, who in July was adjudged a bankrupt, had told a patient that he (the patient) had a serious liver disorder, which, if not treated immediately, might cause the liver to harden and probably lead to death before the age of 40. He recommended a series of injections, which he said could not be obtained on the National Health Service. The patient was told he would need 135 injections which would cost £1 each. He paid Dr. Pitt this sum in cash, for which he received no receipt. Later, when Dr. Pitt was on holiday in Ireland, the patient went to another doctor, who found there was nothing the matter with him. The second case arose out of an unpaid taxi fare for £5 when Dr. Pitt went to see a doctor who wanted a locum. Dr. Pitt gave the taxi-man the slip at Euston and did not pay the fare.

In July, 1952, at Birmingham Assize Dr. Pitt was convicted of obtaining £75 from a patient by false pretences. The facts were very similar. He was fined £100. He appeared before the committee, when judgment was postponed for a year; the committee then determined that his name should not be erased.

Dr. Pitt, addressing the committee, said that when he was adjudged bankrupt he had a letter from the Warwickshire Executive Council saying that he could not practise under the National Health Service. He never said to the man that he was going to die. In regard to the incident with the taxi-driver, Dr. Pitt said he did not try to run away from the man—it would have been physically impossible for him to do so. In reply to the Chairman, Dr. Pitt said he did not give these explanations at his trial because he was advised to plead guilty, or else he would get three years.

The Registrar was directed to erase the name of William Ronald Pitt. This is subject to appeal within twenty-eight days.

One of three convictions against *Thomas Patrick Joseph Sinnott*, registered as of The Surgery, Aberbargoed, Monmouthshire, L.R.C.P.I (1939), was not notified to the Council at the time, Mr. Widgery stated. It was for driving a motorcar when under the influence of drink on Aug. 1, 1955. After a conviction at New Tredegar magistrates' court, on Sept. 30, 1955, for a like offence, he received a warning letter from the Registrar. He was convicted again at Newport on July 4 last for driving when under the influence of drink, and it was after this that the Council learned of the first offence. In July Dr. Sinnott was fined £100, ordered to pay 5 guineas costs, and disqualified for fifty years.

In 1953 Dr. Sinnott had £20 withheld from his National Health Service remuneration in respect of irregularities in the issue of medical certificates. He received a warning letter. A year later, in May, 1954, £50 was ordered to be withheld in respect of four medical certificates, which were in the usual form stating that he had examined people at particular dates. Asked for an explanation by the Registrar, he admitted that he had issued the certificates without examining the patients, and in mitigation pleaded it was due to pressure of work. The matter was considered by the Penal Cases Committee, and he was warned that for any further improper use of certificates he might risk proceedings.

The Chairman said that the convictions indicated habits which were not only discreditable to Dr. Sinnott and the profession, but might well be a danger to patients. In order to give him an opportunity to overcome his tendency to drink to excess, the committee postponed judgment for a year. Shortly before the session in November, 1959, he would be asked to furnish the names of professional colleagues and other persons of standing, to whom the Council could apply for information, to be given confidentially, as to his habits and conduct in the meantime.

Josef Jan Labno, registered as of 84, Claughton Road, Birkenhead, M.B. Polish School of Medicine (1943), admitted two convictions at Birkenhead of driving a motorcar when under the influence of drink. In 1955 he was fined £50 and disqualified for twelve months. In 1958 he was sentenced to three months' imprisonment and disqualified for five years.

Judgment was postponed until November, 1959.

Louis Aimée Newton, registered as of 4, Shoot-up-Hill, London, N.W.2, M.R.C.S. (1928), was charged with having been convicted at the Central Criminal Court of unlawfully using an instrument with intent to procure a miscarriage and unlawfully killing Jean Josephine Florence Cook, for which he was sentenced to two years' imprisonment on the first charge and to three years on the second, the sentences to run consecutively, which, on appeal, were ordered to run concurrently.

Mr. Widgery said that Dr. Newton was in practice at 118, Harley Street. On Oct. 11 last year he saw in his consulting-room a nurse who had been recommended to him by a psychiatrist who had found that there were psychiatric grounds for terminating the pregnancy. The jury found Dr. Newton guilty on both counts. At the appeal the Lord Chief Justice said there was no evidence whatever that Dr. Newton was a professional abortionist.

In November, 1942, Dr. Newton's name was erased from the Register and remained off for five years. He had engaged in what could be described as some sort of conspiracy to enable young men to avoid military service. His part was to issue false certificates.

The Registrar was directed to erase from the Register by reason of the convictions the name of *Louis Aimée Newton*. This is subject to an appeal within twenty-eight days.

George Thomas Alexander Hastings, registered as of 142, Robin Hood Lane, Hall Green, Birmingham, 28, M.B. Glasg. (1929), pleaded guilty at Solihull magistrates' court of being in charge of a motorcar when under the influence of drink in 1954. On May 28 last at Birmingham magistrates' court he was fined £25 for being in charge of a motorcar when under the influence of drink; and at the same court on June 3 he was fined £35, ordered to pay £17 3*s*. 6*d*. for costs, and disqualified from driving for two years.

Mr. Peter Baylis, of Messrs. Hempsons, solicitors to the Medical and Dental Defence Union of Scotland, said that Dr. Hastings had sought medical treatment. Since he had resumed practice in September, he had not taken a drop of drink. Mr. Baylis read letters from doctors who had treated Dr. Hastings, stating he suffered from an anxiety state. There

were also letters from four consultants and nine general practitioners who were his colleagues.

To give Dr. Hastings an opportunity to overcome his admitted tendency to drink to excess, judgment was postponed for a year.

Robert George Mair, registered as of White Lodge, South Green, Billericay, Essex, M.B. Aberd. (1947), was charged with having been convicted at Preston magistrates' court in 1947 of being drunk and disorderly, using obscene language, and wilfully damaging a police cell, and in 1958 on Jan. 28 at Billericay magistrates' court of a charge of stealing £9 14*s.* in a dwelling-house, when he was remanded in custody for fourteen days for medical and mental reports. In June, 1958, the committee were informed that evidence had been received that the practitioner was unfit to plead, and the inquiry was adjourned.

Mr. Widgery said that Dr. Mair was admitted to hospital in January. The medical superintendent stated in May that he was unfit to plead. He absconded on Sept. 8 last, " and we were also informed at that time by the medical superintendent that in his opinion Dr. Mair was then unfit to plead ".

The Chairman announced that, in the light of the evidence received as to Dr. Mair at the time when he left hospital, the committee had decided to adjourn the inquiry until May, 1959.

Yeok Kin Ng, registered as of 436, Nathan Road, 1st floor, Kowloon, Hong Kong, M.B. Hong Kong (1935), was charged with having committed adultery in his consulting-room with Miss Tam Shun on an occasion when she consulted him professionally, and that in respect of his conduct he was subsequently convicted of rape at the Supreme Court of Hong Kong (Criminal Jurisdiction) at a trial in 1955, when he was sentenced to five years' imprisonment. The charge was one of infamous conduct in a professional respect.

Dr. Ng was not present and was not represented. In a letter read by Mr. Widgery he stated he was unable to appear as he could not afford to go to London; furthermore, he could not afford to employ a solicitor or counsel. Mr. Widgery explained that as this was not a conviction for the purpose of section 33 of the Medical Act of 1950 he had to prove the facts. This he did by reference to transcripts of the trial in Hong Kong.

The committee determined that the facts alleged were proved to their satisfaction and that he was guilty of infamous conduct in a professional respect. The Registrar was directed to erase his name from the Register. This is subject to his being given twenty-eight days in which to lodge an appeal after he has been officially informed of the result. Dame Myra Curtis: " I was wondering why it was so long in reaching us, this case. Was it because he was in prison?" The Chairman: " He asked for it to be adjourned until he was out of prison."

Medicine and the Law

The Divorce Law and Voluntary Patients

A WIFE became a victim of chronic alcoholism and on March 9, 1951, was admitted to a mental hospital under a three-day order. On March 18, 1951, she became a voluntary patient and a few months later was transferred to Tone Vale Hospital, Taunton, where she remained thereafter as a voluntary patient. In December, 1956, the husband filed a petition for divorce on the ground of the wife's incurable unsoundness of mind. In June, 1957, the official solicitor filed an answer on behalf of the wife denying that she had been continuously under care and treatment within the meaning of section 1 (2) of the Matrimonial Causes Act, 1950, and that she was incurably of unsound mind. Before the suit was heard the Divorce (Insanity and Desertion) Act, 1958, became law; section 1 (1) of this Act provides that a person should be deemed to be under care and treatment for the purposes of section 1 (2) of the Act of 1950 when receiving treatment for mental illness as a resident in a hospital or certain institutions.

At the hearing evidence was given by Dr. Kenneth Bailey, medical superintendent of Tone Vale Hospital, who felt difficulty in saying that a voluntary patient in the wife's situation was necessarily of unsound mind; he spoke of the effect of alcoholism on the wife's brain, of delusions as to persecution and thefts, but said that her condition had so improved in 1952 that he had suggested she return home under supervision, but that the husband, who had three children, had not seen his way to accept that suggestion. Dr. Bailey added that the wife was suffering from dementia and that no further improvement was possible although he did not think that she should be certified. As in all cases where a divorce is sought on the ground of incurable unsoundness of mind a specialist's report had been obtained on behalf of the official solicitor, and, in view of Dr. Bailey's evidence and with the consent of both counsel, that report was put in evidence. It was to the effect that the wife had become feeble-minded and childish, needed much nursing attention and, in the light of present medical knowledge, was incurably insane.

Mr. Commissioner LATEY, Q.C., said that the effect of the general definition of care and treatment in section 1 of the new Act avoided the objection raised as to care and treatment in the answer, but in all these cases the court had to be assured that the patient was incurably of unsound mind within the meaning of the Act of 1950. Usually that assurance was given by the medical superintendent, or his deputy, of the particular hospital, but in this case Dr. Bailey had felt some qualms as to whether a voluntary patient such as the wife was necessarily of unsound mind. As a voluntary patient the wife must be considered at the present moment to have volition to stay in or leave the institution.

The effect of the new Act was clearly a matter of public importance. There was no statutory definition of the formula " incurably of unsound mind " in the Act of 1950, and following the principle in Randall *v.* Randall [1939] P. 131, those words must be given a wide interpretation on the facts of each case. Although doctors might differ as to what constituted unsoundness of mind and whether it was incurable, that was a matter for the court to find as a fact, keeping in mind the circumstances of each case, the terminology of the statute, and the judicial authorities. On the facts of the present case his Lordship found that the wife was incurably of unsound mind and, having been for upwards of five years before the petition under care and treatment as defined in the Act of 1958, he pronounced a decree nisi of divorce. Having regard to the recent policy of extending the range of voluntary patients and decertifying certified patients it might well be that a large proportion of mental patients, whether voluntary or even certified, would not come under the category of persons incurably of unsound mind within the meaning of the Act of 1950, and each petition on that ground must be considered on its merits. His Lordship added that in view of the fact that this was the first case under the new Act he had thought it right, contrary to custom, to see the report of the specialist and to strengthen his judgment with its contents.

LOCK *v.* LOCK. *Probate Divorce and Admiralty Division:* Mr. Commissioner LATEY, Q.C.: Oct. 28, 1958. Roger Ormrod, Q.C. (Gregory Rowcliffe and Co., for Risdon, Weston, Witham & Hancock, Taunton); James Comyn (Official Solicitor).

E. JONES
Barrister-at-Law.

Points of View

DANGER! DOCTORS AT WORK *

JOHN FORBES
M.D. Lond., F.R.C.P.
CONSULTANT PHYSICIAN, WREXHAM HOSPITALS

"Even if doctors apply all their knowledge, and act in good faith, they often do harm when they think to do good."—HENRI ESTIENNE (1528–1598), *Apology for Herodotus*.

MOST of us, if asked whether we thought we did more good than harm to our patients by our doctoring, would be slightly astonished and mildly affronted. We are accustomed to think of ourselves as benevolent members of society; but, although we are on balance almost certainly justified in our belief, the truth of the assumption is not as self-evident as we might think. A century or two ago, when bleeding and purgation were common practice, and surgery was crude butchery, it is not unlikely that, as many contemporary critics said, doctors killed more people than they cured. Even today we can, unwittingly and with the best intentions, do quite a lot of harm, either individually to our own patients or, as a profession, to the community.

There are four chief reasons why honest, hard-working, and conscientious doctors sometimes do harm when they think to do good: they are ignorance, misdirected enthusiasm, over-confidence, and timidity.

Individual ignorance does not arise, because the conscientious doctor is not ignorant, at least so far as medicine is concerned. But we must consider the question of ignorance in the wider sense among the medical profession as a whole. It has to be admitted that most doctors compare poorly with other professional men when it comes to a knowledge of such things as literature, philosophy, logic, economics, and even science. (We deceive ourselves if we think that we are trained in scientific method. A few may be, but the majority of clinicians certainly are not. Ask any real scientist.) Medicine is such a vast and absorbing study, and the course of training for it so long and exacting, that most of us have little time or inclination to dabble in other branches of learning—though there have been, of course, notable exceptions. Doctors are often too busy and too tired to take an active part in non-medical intellectual societies. Even at social gatherings we tend to talk too much about medicine (this is not entirely our fault, for laymen love to discuss medical topics). And it may be that we flock together too much and have too many professional discussion groups, which meet too often. The unfortunate result is that our comparative ignorance of non-medical subjects may sometimes lead us, as a profession, into error. We are liable to be led astray by ideas that are based on unsound premises or on fallacious reasoning. Many of the false gods that we have worshipped in the past, such as Focal Sepsis, Intestinal Autointoxication, and Vitamin Therapy, might never have achieved the popularity that they did if more doctors had been better trained in logic and in the appraisal of scientific data. Those who would reduce the time spent by medical students on general education and the basic sciences should ponder this.

Enthusiasm is a virtue and a particular asset of youth. Happy is the man who can preserve it into middle age and beyond, tempering it with prudence and experience. Most of us were full of enthusiasm when we qualified, and tended to over-investigate and over-treat our patients, until we came to appreciate the healing powers of the *vis medicatrix naturæ* and the remarkable tendency of patients to get better whatever we did. Youthful enthusiasm is certainly not to be discouraged, and even when excessive is less harmful than sloth. It becomes dangerous, however, when it is not checked by experience and common sense, and degenerates into crankiness. Cranks are a menace: the scalpel-happy surgeon with a pet operation, the physician with a taste for amateur "research" which involves puncturing his patients' vital organs, the psychiatrist with a kink in his own psyche, the specialist who sees all disease in terms of his own narrow specialty—these do harm to their patients, if not by actual maltreatment then by wasting their time with useless therapy. Established cranks are deaf to logic and blind to statistics. We must all watch ourselves for the early symptoms and signs of misdirected enthusiasm, and take steps to treat them with large doses of sceptical common sense. A few bees in the bonnet may be permitted to grey hairs; but a swarm is a sign of senility.

Communal bonnet-swarming is liable to occur when large numbers of doctors are sold an idea which is attractive in theory. In therapeutics a new myth is born every minute. It would be salutary if each of us were to be confronted with all his prescriptions for the past ten or twenty years and compelled to read therein the record of his ephemeral therapeutic enthusiasms. Luckily, most of them probably did no great harm; which is more than can be said for some of the misguided enthusiasms of our surgical brethren. As Robert Burns nearly said, "Though you cut his vagus nerves, a man's a man for a' that"; but can the same be said if you cut his lumbar sympathetic chain?

Misdirected enthusiasm is common in the sphere of public health and preventive medicine. The peculiar danger here is the keen medical administrator with a passion for planning, coordination, team-work, liaison, and lots and lots of statistical data. He is liable to produce elaborate schemes which look very nice on paper but which, after putting everybody to a great deal of trouble, somehow do not seem to work out very well in practice. To be fair, it is not always his fault; for he is often under pressure from his political masters, who like nothing better than the feeling of power that they get from organising other people's lives for them. For the past ten years we have in this country had a prolonged epidemic of administrative enthusiasm, which is probably an inevitable concomitant of a National Health Service and a Welfare State. There is, of course, no surer path to preferment in administrative circles than to be fertile in planning. Moreover, the rapid increase in the number of administrative staff in our hospital services since 1948 has meant that more officials have more time to plan schemes. Parkinson has summed up the position in his Law: "Work expands to fill the time available for its completion", and in his further axiom: "Officials make work for one another." Many doctors believe that the Mass Radiography Service is a good example of present-day misdirected administrative enthusiasm. Originally a good idea, when it was used to survey selected groups of the population, it has expanded into an expensive and undiscriminating travelling circus, with advertising to

* Presidential address to the North Wales Branch of the British Medical Association, June 7, 1958.

match. It is possible that we may be faced before long with a similar scheme for routine medical examinations, or "health-checks". These are already popular in Russia and in the U.S.A., though they are not in the latter country carried out at public expense. Such a programme seems a not unlikely target for the next outburst of misdirected administrative enthusiasm.

It may be asked how such misplaced zeal can actually harm the community, apart from depleting its pocket. The answer is, by its effect on the public mind. It is unfortunately true that much well-meant health propaganda today does encourage thoughts of disease and an obsession with bodily well-being. There is a danger that we may turn the British into a nation of hypochondriacs; some would say that we are already doing so. Criticism of so-called positive-health schemes and propaganda is not popular, and lays one open to accusations of obscurantism and cerebral arteriosclerosis. No-one would be so foolish as to deny the great benefits that we have received in the past from advances in public health and social medicine; but these have been largely achieved by improvements in the standard of living, which frightens no-one. Today the propaganda is more personal, more alarming for the individual. Are we (and in this we cannot absolve our own profession from blame) not in danger of making a fetish of bodily health? Might we not spend the money more profitably on propaganda for *spiritual* health?

Over-confidence is a failing chiefly found among senior consultants. Its chief manifestations are a scarcely veiled contempt for general-practitioner colleagues, a strong tendency to dogmatic assertions based on "my experience" (often imperfectly recalled), and a more or less complete deafness to the opinions of others. There is an inclination to leap to premature conclusions, and an equal reluctance to admit that they could be wrong. Diagnostic errors are therefore common, but are usually covered up cleverly, patients being bamboozled by a bluff, self-confident manner, and family doctors misled by judicious prevarications and half-truths. The great man's registrar sees through it all, of course, but does not dare to open his lips till he too is a senior consultant.

Want of humility may show itself in other ways. There is, for example, the doctor with an overdeveloped sense of mission. Such a one sees himself, unconsciously perhaps, as a Healer. No-one would deny that a proper consciousness of vocation is desirable in a medical man, but these Dr. Kildares carry it to extremes. They are, of course, basically hysterical personalities with a taste for dramatics. Their patients are fussed over till they and their relatives develop anxiety states, are literally "rushed" to hospital whenever opportunity offers, and may even undergo unnecessary operations because their doctor needs to feel that he is doing them some positive good.

Timidity shows itself most frequently in the field of therapeutics, and may result either in over-care or in under-treatment. An example of over-care is the patient with a mild coronary thrombosis who is confined to bed for three months and afterwards forbidden to smoke, drink, or engage in his favourite recreations—all quite unnecessarily. Children are sometimes kept in bed for weeks with vague "rheumatism" when there is really nothing the matter with them, simply because their doctor lacks the courage of his convictions. A timid doctor can very easily manufacture neurotics and chronic invalids, and the sad thing is that his patients are often pathetically grateful for his wonderful carefulness. On the other hand, timid under-treatment is not uncommon in these days of powerful drugs which are effective in proper dosage yet may have unpleasant side-effects or only a small safety margin. Ganglion-blocking agents and anticoagulants are good examples, for they must either be given in effective dosage or they might as well not be given at all. The temptation is to play safe by underprescribing. But half-measures have no place in therapeutics, and it may be necessary for the patient to live dangerously for a time if he is to live at all. Prognostic timidity results in a tendency to exaggerate the severity of an illness when discussing it with the relatives. The temptation is strong, for the doctor can hardly lose. If the patient dies—well, he said it was serious. If, as is more likely, he recovers, the near-miracle was due to the skill and devotion of his medical attendant. A remarkable reputation can be built on prognostic pessimism. The habit does no great harm to the patient, but it causes needless anxiety to the relatives, and is really rather contemptible.

Finally, there is the $64 question: Does medicine as we practise it really benefit mankind in the long run? It is possible to argue that doctors, by saving the lives of mental defectives, hæmophiliacs, diabetics, and the like, are perpetuating undesirable genetic strains that would otherwise die out; and that by keeping old people alive they are throwing an ever-increasing economic burden on to the younger members of the community. Philosophers may argue these points as they will; we, as doctors, are not required to answer them. A doctor's task is to heal the sick and to alleviate suffering, without thought of his patient's age, colour, nationality, religion, or social worth. If he departs from this principle he is lost. The only really serious danger of any system of State medicine is that economic or political considerations might come to be regarded as important enough to interfere seriously with it. Such a contingency is remote in this country, but we have seen it happen under totalitarian regimes elsewhere.

Public Health

The Registrar General's Commentary

In his commentary on the vital statistics for 1956 the Registrar General [1] remarks that in that year the infant-mortality rate of 23·7 per 1000 related live births was one of the lowest in the world; in Europe, only Sweden and the Netherlands had lower rates. Between 1951 and 1956 the infant-mortality rate declined by 20%. Over 70% of the deaths occurred in the first four weeks of life. Boy babies appeared more liable to die from almost any cause, accidental or other, than girl babies.

Births.—The birth-rate of 15·6 per 1000 population was 0·6 higher than in 1955. This increase continued the rise which began in the late spring of 1955; until then the rate had been fairly constant since 1951. (This upward trend continued in 1957, and the birth-rate for that year proved to be the highest for eight years.) The long-term prospects are that current generations are likely to replace themselves with a little to spare, completed families being of rather more than two children on average.

Divorce and remarriage.—The number of divorce decrees granted continued to decline, from 26,816 in 1955 to 26,265 in

1. The Registrar General's Statistical Review for England and Wales, 1956: Part III, Commentary. H.M. Stationery Office. Pp. 294. 16s. 6d.

1956. It seems likely that the general level of divorce has doubled as a consequence of the 1939–45 war. The proportion of divorced persons who remarry continued in the region of three-quarters, being a little higher for men than for women.

Tuberculosis.—The number of deaths from tuberculosis again declined, from 6492 in 1955 to 5375 in 1956. This represented a decline in the death-rate of 17% for males and 20% for females. For those aged 15–64 the rate fell by about 20–25%, but at ages 65 and over the fall was relatively small for males and for females there was no change. The crude notification-rates of 88 per 100,000 population for males and 55 per 100,000 for females were the lowest since the present form of records was started in 1938. Mass miniature radiography revealed 2·0 cases of tuberculosis per 1000 examinations, compared with 2·2 per 1000 in 1955.

Cancer.—Deaths from cancer of the lung (18,186) increased by about 5% for both sexes compared with 1955. Since 1950 the death-rate from leukæmia has increased for both sexes—for males from 47 per 1,000,000 population in 1950 to 57 per 1,000,000 in 1956, and for females from 37 to 47. The rate for children under 15 has shown no sign of any regular trend, but at ages 15 and over there has been a steady increase in the rates, particularly for deaths from myeloid leukæmia.

Accidental and violent deaths.—Deaths from accidents and violence have increased steadily since 1952, and in 1956 there were 21,870 such deaths. The death-rates from these causes per 1,000,000 population increased for males from 568 in 1952 to 604 in 1956, and for females from 298 to 383. In 1956 nearly 5% of all male deaths and 3·5% of all female deaths were due to accidents or violence. The three principal causes of violent deaths were motor-vehicle accidents, accidental falls, and suicide. Between 1952 and 1956 the death-rate from motor-vehicle accidents increased by a sixth for males and by a third for females. In the same period deaths of pedestrians on the public highway increased by 16% for males and by 27% for females. In 1956, 1225 motorcyclists were killed—slightly fewer than in 1955. Burns and scalds in the home and in residential institutions caused the death of 215 males and 492 females. Burning clothing was responsible for the death of 290 females: 113 caused by open fires, 49 by electric fires, 37 by gas fires and stoves, and 91 in other ways. There were 76 deaths (41 males and 35 females) from burns caused by the person falling into the fire: 34 of the males and 30 of the females were aged 65 or over.

Certification of cause of death.—The volume contains the results of an investigation carried out by the General Register Office with the cooperation of ten hospitals with the object of gaining information on the correlation between clinical and postmortem diagnoses of the cause of death. In 19% of the deaths investigated where necropsy had been carried out, the diagnosis given by the clinician before the necropsy differed as to the underlying cause from that given by the pathologist as a result of his findings. The effect of these differences on the treatment of the patient and on the eventual outcome was very small, and in general the net statistical effect is small.

Deaths in 1957

The medical tables of the Registrar General's Statistical review for 1957 [1] give detailed statistics of deaths from all causes and notifications of infectious diseases in 1957 by age, sex, area of residence, and time of year.

All deaths.—The death-rate was 11·5 per 1000 population—0·2 lower than that for 1955 and 1956.

Stillbirths and deaths of infants.—The stillbirth-rate was 22 per 1000. The rate was also 22 in 1953, but it was 23 in each of the years 1954–56. The infant-mortality rate continued to decline—from 24 per 1000 related live births in 1956 to 23 in 1957. This was the lowest annual rate ever recorded in this country. Over 60% of the deaths occurred in the first week of life, and over half of these were on the first day. Immaturity continued to be the chief cause of infant deaths.

Maternal mortality.—There were 349 deaths from maternal causes in 1957, the lowest number ever recorded in this country.

Cancer.—Deaths from cancer represented just over 18% of all deaths: the total (94,017) was 1307 more than in 1956. The death-rates for cancer of the lung and bronchus increased again: for men from 726 per 1,000,000 population in 1956 to 759 in 1957, and for women from 111 to 116. Nearly 33% of all male deaths from cancer were ascribed to cancer of the lung and bronchus, but only 6% of the female deaths.

Coronary heart-disease.—There was a further increase for both sexes in the number of deaths from coronary heart-disease, which numbered 47,809 for men and 28,515 for women—an increase over the 1956 figures of 2% for each sex. The death-rate for this cause has doubled since 1947, and nearly 15% of all deaths are due to it.

1. The Registrar General's Statistical Review, 1957: Part I, Tables, Medical. H.M. Stationery Office. Pp. 373. £1.

Parliament

The Wolfenden Report

IN opening the debate on this report in the House of Commons on Nov. 26, Mr. R. A. BUTLER, the Home Secretary, said that it raised in the most acute form one of the perennial dilemmas of organised society—how far the law and the compulsion of the law should seek to regulate the behaviour of the individual. It was clearly the function of the law to protect the citizen, but it was less clear what kinds of conduct were so contrary to the public good that the law ought to interfere.

Mr. Butler had been impressed by the committee's argument that if conduct which was morally wrong was not injurious to society, then it ought to be left to the individual's conscience. But homosexual conduct between consenting adults could only be left to the private conscience if we were convinced that by doing so society would not be harmed. This was a proposition which many people still found difficult to accept. They believed that homosexual groups might tend to draw in and corrupt those who were bisexual by nature.

He realised that the intention of the Wolfenden Committee in proposing an alteration in the law was not to encourage or legalise homosexual practice but to remove them, like adultery and other sins, from the realm of the law. But in his view education and time were needed to bring people to understand this point of view. Many would regard the change as implying if not approval at least condonation. The Government were satisfied that they would not be justified at present, on the basis of opinions expressed so far, in proposing legislation to carry out the recommendations of the committee. He wished to add that he realised that prison sentences made the victim's last state worse than the first. His visits to prisons had shown him how unsuitable in many cases a prison sentence was for the redemption of a homosexual. He welcomed this debate because he hoped that it would do something to educate opinion towards a reform which could be generally accepted. Of one thing he was sure—that we needed more knowledge. We knew little of the causes or extent of homosexual conduct, and in the absence of knowledge we could not adequately judge the consequences of any action we might take. The committee had drawn attention to the need for research, and he was hopeful of making arrangements to meet this end.

Turning to the second part of the committee's remit, Mr. Butler said that prostitution was essentially a social problem, though that did not mean that the law should make no contribution to the redemption of the prostitute. But each girl who became a prostitute was a reproach to our society.

Conditions had altered since his own kinswoman, Josephine Butler, had studied this problem. Poverty no longer forced girls into prostitution. The committee was in no doubt that nowadays it was a way of life deliberately chosen because it suited a particular woman's personality and gave freedom from irksome routine and gave the means of earning much more than she would earn in regular employment. He agreed with the committee that we should take every legitimate chance of dissuading girls from adopting prostitution, by advice and help rather than by involving them in the machinery of the law, and through the probation and other services they proposed to practise every art of redemption.

The committee believed that one of the functions of the law was to clean up our streets, and he had no doubt of the need to do this. He did not believe that this was only hypocrisy or keeping up appearances. He thought that the state of some of our streets was a danger to our young people, and he proposed to introduce legislation giving effect to the recommendations of the committee dealing with this point. But he recognised that any change in the law would leave the great moral question of whether, if we took action to clear our streets, we were in the end doing anything to remove the evils, difficulties, sorrows, and tragedies of prostitution.

HOMOSEXUAL CONDUCT AND THE LAW

Mr. ANTHONY GREENWOOD could not believe it justifiable that men who, for a reason we did not understand, practised homosexuality should live their lives under the shadow of the law and at the mercy of the blackmailer. Life was harsh enough for these people without society adding to their burden. The fact that the law was largely unenforced, and, indeed, largely unenforceable, was certainly no reason for retaining it. Nor could he find any evidence that the sanctions of the law were an effective deterrent. It seemed to him that one was as likely to cure a homosexual of his perversion by sending him to an all-male prison as one was likely to cure a drunkard by incarcerating him in a brewery.

Sir HUGH LINSTEAD, who was a member of the Wolfenden Committee, thanked the Home Secretary for not having shut the door completely and finally on some implementation of the recommendation about consenting male adult homosexuals. He gathered from the Minister's approach that if public opinion could be shown to be further in favour of the recommendation than appeared at the moment it might be possible for the subject to be reopened.

From the evidence before the committee it had emerged how necessary it was to differentiate homosexuality from homosexual acts. Homosexuality was not an activity, and one could be a homosexual without actively performing homosexual acts. He thought it was equally important to indicate that it was not a disease. Again, if was important to remember that homosexuals were not a special class of the community. They were a cross-section, containing very brilliant men and the dullest oafs. There were many estimates of the number of homosexuals in Great Britain. The lowest was 4% of the community, which meant that we were dealing with a homosexual community of not less than 2 million people. Of this number roughly half were men and half women, half were practising and half chaste. He asked members to contrast the figure of half a million practising male homosexuals with the one hundred who were convicted annually.

There could be no danger that the proposed change would extend homosexuality, because homosexuality arose from causes quite apart from the criminal law. It might be hereditary. It was certainly fixed at an early age. Again, this law was probably more capriciously enforced than any other and there was a regrettable tendency to prosecute for stale offences. Nor was it a deterrent, for homosexual acts were increasing. It was not reformative, because in most cases one could not change the direction of an adult's affections.

He believed that what male adults did in private should be judged in the field of morals and not in the field of law; and the most potent moral assize was public opinion. He suggested that it would be more, and not less, potent if it no longer had to justify itself for propping up an unworkable and unjust law. To change the law could also throw a new social and moral responsibility on the homosexual community itself. If we no longer imposed on these people a legal code of sexual behaviour which we did not exact from anyone else, we could surely expect them to accept the same responsibility as the rest of us for behaving themselves in public. The social aim of the recommendation was to swing the majority of homosexuals, practising and non-practising, on to the side of the law, against those whose preference is for boys and against those who offend against public decency.

Mr. WILLIAM SHEPHERD thought that, in trying to be fair to homosexuals, the case against them had not been adequately presented. He would like to see these people compelled to exert the maximum discipline over their own tendencies, largely for their own sake. One of the dangers in homosexuality for a man was in his old age. The continual search for new contacts was degrading and many men ended in their later years hanging about public lavatories, where they were apprehended by the police. If a man could be diverted from homosexual practices—and there was a wide field for diversion—he would become a better and happier citizen. There was far too much sympathy with the homosexual and far too little regard for society. Homosexuality caused a great deal of human unhappiness in married life. It set up a society within a society, and in some fields of human activity it had already become disturbing. He was convinced that it would do damage to the interests of this country, and in the long run to the interests of homosexuals, to make the change which the Wolfenden Committee recommended.

PSYCHOLOGICAL ABNORMALITY

Mr. B. T. PARKIN returned to the question of prostitution and said that a big gap in our knowledge was the mentality of the customer. Part of the trade undoubtedly was sustained by casuals and could be reduced by energetic measures. But why did the others prefer to pay? First of all, perhaps, there was the attitude of the person who felt that sex was a problem that he could not face, and who, when he came up against it, preferred to pay rather than commit himself emotionally. Then there was the person who feared and hated sex, and felt that he had to demean the act in some way. There might be a common pattern. Perhaps there was some sort of connection. That was the sort of research that he would like to see undertaken. The extraordinary thing about the common prostitute was not that she was a woman who gave herself to anyone but that she was a woman who gave herself to none. If there was one field of emotional human relationship which had a bearing on this problem, it was not the emotional relationships between adults but the emotional relationships between parents and children.

Dr. A. D. D. BROUGHTON agreed that there must be something psychologically abnormal about a woman who chose prostitution as a way of earning a living. Those whom he had met in his professional experience were women who had been deprived of the love of their parents in childhood. They were incapable of giving or receiving love. They had been attracted to prostitution because it was an easy way of earning a living, and they were drawn towards it by a deep desire for the real love which they were incapable of giving or receiving. They all suffered feelings of isolation and worthlessness. But though he pitied these women he felt that, when we considered this report, we must think of what was best for the community. He was of the opinion that the sight of prostitutes in our streets was displeasing to respectable men, offensive to respectable women, and a thoroughly bad example and a temptation to the young. For those reasons, he agreed with the recommendations of the Wolfenden Committee. But if we accepted

the recommendations, we should be quite certain in our minds that we were not effecting a cure. All we should be doing would be trying to drive prostitution off the streets.

The causes of homosexuality were also deeply embedded in a person's mental make-up. He felt sorry for these people too. There was no doubt that the law was savage in dealing with them; but, if we accepted the recommendations of the Wolfenden Committee, he feared that some—certainly not all—homosexuals would repress their homosexual feelings less. They might show in public some signs of the affection that they have for one another. Because it was biologically wrong, this would be a shocking example to young people.

THE ADOLESCENT

Dr. REGINALD BENNETT was unable to subscribe to the view, accepted by the Wolfenden Committee, that the man who accepted an adult male as his partner would not seek an adolescent male. In his practice at the courts he saw a fairly large number of homosexuals and he had been struck by the proportion who had been picked up as adolescents. They were late developers, uncertain of their sexual direction, and they had been pushed in that direction. He had found it remarkably easy to cure this group with hormone therapy, which showed that we could not regard homosexuals as hard and fast incurables, nor as hereditary, congenital, or even environmentally produced people who must have a separate way of life. A big part in restoring these young men to normal life had apparently been the fear of the sanction of the law. He believed, therefore, that it would be disastrous to alter the law, and he could not accept the recommendations of the Wolfenden Committee on homosexuality.

Mrs. EVELYN EMMET had studied many case-histories of young prostitutes while she was chairman of an approved school. The two principal factors in their background were bad homes and low mentality or poor education. If we were really to try to repress prostitution we must take a longer view. Bad homes meant parents who had not realised their responsibilities. She felt that in recent years we had gone the wrong way about sex education in schools. We ought to be training boys and girls in the responsibilities of married life and parenthood of which sex naturally would be a part. Instead, sex had been taken out of its context, dealt with separately, and given far too great importance.

PUBLIC OPINION

Mr. KENNETH YOUNGER thought it not unnatural that the public mind was not yet ready for changes in the law on homosexuality, because this was a subject which was almost undiscussed in public until the Wolfenden report was published. He believed that on such a subject people began by accepting as normal and natural whatever had been in the past. There was a long tradition linking homosexual offences and the criminal law. People had got this into their heads, and positive steps must be taken if we were to get rid of these old-fashioned ideas. It must be remembered that we were not dealing with a tiny group of peculiar people, but with a large and varied minority of the community.

"TWO OF THE OLDEST PROBLEMS"

Mr. DAVID RENTON, joint under-secretary of State for the Home Department, pointed out that homosexuals, besides the genuine inverts, included a wide range of others, varying from the psychopathic pervert to the opportunist male prostitute. The Government were faced with the problem that if they were to legislate to protect and absolve the genuine minority, they might foster the growth of the larger group of homosexuals.

It had been said that we should not try to drive prostitution off the streets, because that was merely sweeping it under the carpet, and would perhaps create greater problems by allowing it to become a highly organised trade. That argument could not be ignored, but the Government were worried about the present evil. If, in curing that evil, others arose, we must deal with them as became necessary. But perhaps even more unpleasant than seeing so many women offering themselves for hire was the knowledge that they had fallen into that way of life and what lay behind it. Although the present age was one of rapid material and social progress, and great advances in scientific knowledge, the House had been discussing two of the oldest problems known to civilised man.

QUESTION TIME

Nurses' Pay During Midwifery Training

Mr. CHARLES ROYLE asked the Minister of Health if he would take steps to pay State-registered nurses their full salaries while training as midwives.—Mr. WALKER-SMITH replied: No, Sir. This is a matter, in the first place, for the Nurses and Midwives Whitley Council.—Mr. ROYLE: Is there not a real anomaly here? Is not the position that State-registered nurses who are taking training in the tuberculosis, ophthalmic, and orthopædic service and in relation to neurosurgery and plastic surgery are paid the full salaries of staff nurses during that training?—Mr. WALKER-SMITH: If it is an anomaly, it is pretty well rooted in the past, because this differentiation was established in 1943 and was confirmed by the Whitley Council in 1949 in its reorganisation of the salary structure. However, this matter is to be discussed by both sides of the Whitley Council, and we will see what comes out of that.

Dr. EDITH SUMMERSKILL: Will the Minister consider this point? In various parts of the country there is a great shortage of midwives. Paradoxically enough, these midwives, whom we particularly want, very often find it difficult to undertake the necessary training because they are not treated in the same way as other nurses.—Mr. WALKER-SMITH: It would, of course, appear that that is so. However anomalous the position may or may not be about their remuneration, the numbers coming forward for training are sufficient to meet the full needs of the midwifery profession. The crucial problem is that they do not go on in sufficient numbers to practise midwifery when they are trained.

Mental Nurses' Overtime

Mr. KENNETH ROBINSON asked the Minister what representations he had received, in connection with the shorter working week for nurses, about the requirement that the first four hours of overtime each week for mental nurses shall be unpaid.—Mr. WALKER-SMITH: I have received representations that the rule providing for additional payment to mental nurses for excess hours worked should be amended. This is a separate question from the efforts now being made, in accordance with the Whitley Council's recommendation which I accepted, to secure a reduction in working hours in all hospitals by reorganisation of the nursing services.—Mr. ROBINSON: Is the Minister aware that, in effect, this rule means that the mental nurses notice no difference whatever from the introduction of a shorter working week?

Divorce Law and Change of Sex

Mr. KENNETH ROBINSON asked the Attorney-General if his attention had been called to the legal difficulties arising from the case of Dolling *v.* Dolling, recently before the Court of Appeal[1]; and if he would give consideration to amending the law of divorce to enable marriages to be dissolved on the grounds that a spouse has changed his or her sex.—The ATTORNEY-GENERAL: I am not aware of any legal difficulties. The Court of Appeal held, on the particular facts of this case, that the conduct of the respondent did not amount to cruelty. I do not think that there is any need to amend the law by seeking to specify what acts constitute cruelty for the purposes of the law of divorce or by making express provision for the type of case mentioned in the question.

1. See *Lancet*, Nov. 22, 1958, p. 1118

In England Now

A Running Commentary by Peripatetic Correspondents

SOON after I graduated I went into practice in a rural fishing community on two islands in the Bay of Fundy. Till then my life had been marked off in minutes, hours, and days; but when I asked a lifelong resident what time of day it was, he replied, "Sonny, you ain't been here very long, have yuh? Nobody on the Islands carries a watch—we have a page from the calendar and from it (he produced the sheet, May, 1951, from his shirt pocket) you can see when the moon is new and full. On those days the tide is high at half-past nine in the morning and low at half-past three in the afternoon. Because of the high Bay of Fundy tides, and the way the Government built our ferry wharves, you can't get on to the ferry at low tide, or for two hours on either side of low tide. When the moon is new and full you can't get off this island from half-past one to half-past five. Furthermore, you can't get off the island after dark, or when the wind blows. The tide is three-quarters of an hour later every day, your stomach tells you when you're hungry—and most can remember which meal is coming next. Now, Sonny, I ain't got no time on me but I had m'supper. How much more do you need to know?" After this meeting I realised that there were more useful things than the conventional wrist-watch. A compass, when used intelligently, with a calendar or tide book, would tell you whether you'd be home in time for supper.

There wasn't a man, woman, or child in the islands who didn't know when "mail time" was. This was defined to me by a fellow new resident as being half an hour after the once-a-day bus from Digby (our mainland big town) arrived in the village. The local postmaster took about half an hour to sort the mail, and during the sorting period the village ate its supper. Since the villages were half an hour apart by bus, mail time was different in each village. The pattern in each of the three villages was the same. The citizens gathered about the little post-office, collected their mail, and read the day-old daily paper sitting on the benches in the local general store. When the paper was done they attended any community meeting that was scheduled. The starting-time for such a meeting was invariably "a little while after the mail closes, when enough people gets here".

Daylight-saving time in the outside world made its own contribution to the system. The tide books and the moon phases on my calendar remained on standard time. The islands and their inhabitants remained on tide time, meal time, and mail time. Driving time from Digby to the islands was one hour in a south-westerly direction. I soon found that by leaving town at 3 P.M. I arrived on the islands at 3 P.M., and this simplified much of the time-distance problem in a rural practice. Going in the opposite direction, however, two hours were needed for a one-hour drive, plus an allowance for low tide and wind direction. All this played havoc with Digby's operating-room schedule as well as the good nature of professional colleagues. My solution to this dilemma was simple. Two watches were needed, one labelled south-westerly and the other north-easterly, with due allowance for tide and wind direction.

The philosophy of time is an absorbing study. Life on the islands passes at such a slow pace that it takes fully two years for a city dweller to decelerate to the local tempo. The folly of driving a modern high-powered car at breakneck speed to save time becomes clear when your journey is blocked by a ferry boat that isn't there and won't dock until the tide change in two hours. You have no alternative but to think for two long, beautiful, uninterrupted hours. This is time enough to plan your day, solve most of your problems, figure out your difficult cases, reminisce about pleasant things, and harvest a splendid crop of daydreams. This is a far more reasonable use of valuable time than the rapid, exhilarating, exciting, noisy, bumper-to-bumper squandering of time in the city. My wife says I've never been on time for anything since we left Briar Island.

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When one thinks one is far away from England some surprising event will direct one's thoughts homewards.

I was motoring in Portugal and decided to spend the night at Batalha. I parked the car in the square in front of the abbey when a young girl asked me in fair English what was the name of the bird she had in her hands; she had rescued it on the coast half-way between Lisbon and Oporto. It was an oyster-catcher which had broken its wing and which she said she would nurse and it would become her pet. On its leg was a ring showing it had been born in England, and information of its whereabouts should be sent to the Natural History section of the British Museum—a request with which we complied.

But we soon found Batalha had many ancient links with England. The abbey was erected by Don John I to commemorate the battle of Aljubarrota against the Spaniards in 1385 when Portugal gained her independence. The next year Portugal became our ally and Philippa of Lancaster, John of Gaunt's daughter, was married to the King in Oporto Cathedral. English architects who came to Portugal at Queen Philippa's request have their monument in the beautiful cloisters at Batalha.

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Candidate midwife after exhaustive viva with examiner: "Well at least we had one thing in common. We use the same thing for sterilising our feeding bottles that he uses for cleaning his car."

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The children and I were discussing christian names. Hamish (he is 10) was particularly interested: his mind is a ragbag of miscellaneous information which he enjoys augmenting. "What are Grandfather's christian names?" he asked. "James Alexander," I said, a little indistinctly. "Alexandra?" "No, Alexander." "That's a relief," he said: "it wouldn't do for a grandfather to be a Herma-Froddite, would it?"

"No, I suppose not," I said, vaguely. "It's in the *Guinness Book of Records*," he explained patiently: "largest number of children at one birth, 365. They were 182 boys, 182 girls, and one Herma-Froddite. Jolly good book: full of useful stuff like that." "I'm sure it must be," I said, resolving to have a closer look at it next time. Anyway, Grandfather can't complain: it was a birthday present from him.

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As a professional reprint-seeker I can perhaps enlighten my fellow peripatetic on why he has had so many requests for his article on Hamburger's syndrome. I have cupboards full of reprints of articles on Hamburger's syndrome, many of them personally signed. I have read none of them. Most of them are unreadable anyway, since the only foreign language I can read is French and these are nearly all in Russian, Spanish, Japanese, or even better. Every week I eagerly search the library journals and abstracts and send off a fresh batch of requests. My morning post is phenomenal. Everyone comments on my tremendous keenness. People envy the broadness of my interests. Some even regard me as an authority on Hamburger's syndrome. Only my son knows my secret; and he is even more to blame for this deception than I am, for it was his enthusiasm for stamp-collecting that first started me on this game.

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This year, since we had no summer with which to pinpoint dates, I've taken to using my patients for this purpose—the day before Mrs. A had her tenth; the day Mrs. B developed jaundice; the week after Mr. C had his coronary. It works adequately enough, but my friends are inclined to think it a trifle morbid. The day we got our 4% rise is a more cheering aide-mémoire, and it is certainly a date to remember.

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It is unfortunate that the spirit of nationalism is like measles in a family. Just when the children first attacked are getting over it the younger ones catch it!

Letters to the Editor

MEDICAL RESEARCH AND EMIGRATION

SIR,—Your two leaders on medical research (Sept. 27) and medical emigration (Nov. 29) raise points of considerable importance which need a complete analysis if we are really to understand their inner meaning. It is most difficult to get accurate figures about the number of people who wish to do research, and, lacking either the encouragement or the right climate of opinion in this country, seek it elsewhere and emigrate.

I am convinced that British medicine is so organised as to be in grave danger of lagging behind in the period of expansion which medicine is undergoing all over the world. We need not only people actively working in research centres, but people well able to immediately apply the results of advances made by such work.

In the past it has been a favourite jibe that doctors on medical units are incapable of really acting as physicians, and are some sort of applied physiologist. In certain areas there still seems to be resistance to the man who has done research, especially if this cannot be seen to have immediate clinical application. For my part I strongly hold that the best clinical medicine is practised where the highest quality of clinical research is practised, whether in a teaching or a non-teaching hospital; and within the profession it is this attitude that needs to be achieved if we are to keep pace with the advances of medicine.

What are the possibilities for young men who wish to do research and yet practise clinical medicine?

They usually come to the medical unit, often without laboratory training in a basic science. These people are chosen not only for potential research ability but because of their high clinical ability, since in the medical units it is recognised, I think, that there is not much of a future for those who wish to practise clinical research unless they have high clinical abilities. After about three years either they are worth persevering with or they are advised to try another career. They can then, if successful, at this stage remain in a junior post for at the most another three years, or else move on to another medical unit. If fortunate, the graduate will be able to move on to a more senior post in this way; but fortune is needed because most of these posts are filled by people who have been in such posts for many years—which means that there is no path through the medical unit. At this stage, of course, he could turn to the Medical Research Council, which could support him either part-time or, if he merited it, whole-time. If his interests were very specialised, he might find an outlet in one of the many M.R.C. units.

The absolutely first-class person can probably find a satisfactory post; but then not all are obviously first-class at the start and not all wish to go by these pathways.

What are the possibilities for the doctor who finds his main stimulus in the care of patients, and yet wishes to engage in research? Though it is presumptuous for me to say so, I think it is here that the main weakness in British medicine lies; and it is by imagination at this level that we can do most. People who go into the National Health Service as consultants so often find that the time they could devote to their ideas vanishes, and it is as much as they can do merely to maintain their high standards of clinical practice. I have great admiration for the many that still manage to do investigation, but I am sure that many more would do it if the opportunity were there.

There are two ways in which we can tackle this problem. The universities ought to consider seriously the appointment of more senior lecturers on medical units with clinical responsibilities and consultant status. The teaching hospitals themselves should actively pursue the appointment of doctors trained in research methods who will advance their subject and who can be paid for their research sessions by the university or the Clinical Research Board, and for their consultant sessions by the hospital. This means that beds will have to be made available for this type of appointment. If we cannot do this within the teaching hospital, then it is hardly worth looking to the non-teaching hospitals which depend, I think, for a lead in this matter which should surely come from a university. The same principle should obtain in the non-teaching hospitals—that close links could be made with the teaching hospital within the group, and that appointments should be divided between the two. There are few examples of such posts in this country. Outstanding is the one created in Newcastle recently with joint responsibility by the regional hospital board and the university. If from any source we could obtain a flow of people into this sort of post the stimulus to our medicine would be enormous.

To show that I am not basing my case on guesswork, I may say that I have collected the figures for posts obtained from fifteen medical units in England, Scotland, and Wales as well as those from the Postgraduate Medical School during the past ten years. It is, of course, difficult to be sure that the final fate of someone leaving a unit is precisely what the figures suggest, but the following probably give a fair picture of the movements to more senior posts:

From medical units:	
To consultant posts	52
To chairs, readerships, or senior lecturerships	37
Emigrated	14
To research posts	10
From the Postgraduate Medical School (1946–56):	
To regional consultant posts	13
To teaching-hospital or research appointments	18
Emigrated	13

The complete figures at my disposal show that in the ten years about 50% moved to consultant posts, and 25% to more senior posts in academic work, while 17% emigrated. In other words, for all the men in the senior posts in medical units there has been an annual average of about 3·7 opportunities of a higher post (which is hardly very encouraging); and the emigration figures, though one has to be a little guarded here, seem very high and are relevant to your leader last week. A direct loss of good people is something we cannot lightly afford at present.

There is, I submit, room for many more of the sort of posts that I have suggested. This means that more money has to be sought, but I refuse to be inhibited in asking for more money for something which I regard as of great importance in the development of our medicine. Examination of the cost of the hospital service in England and Wales alone for 1957–58 reveals that out of an expenditure of about £359,000,000, medical salaries took about £34,000,000, nursing salaries £79,000,000, drugs and appliances £22,000,000, and other salaries £98,000,000. To implement the proposals I am making would require a sum of money which I regard as a drop in this ocean of expenditure; what is needed, however, cannot be done

unless there is a general belief that it really matters. Then the universities and colleges would find the regional hospital boards receptive, since they would understand the main issue, which is not merely that of creating more jobs but is concerned with the future of our medicine.

I am grateful to those who supplied me with the information. They have no responsibility for the conclusions I draw from the figures.

Medical Unit,
St. Mary's Hospital,
London, W.2. W. S. PEART.

SIR,—Last week's letter from the Widdicombe File is indeed most poignant and pertinent, appearing, as it does, in the same issue as your leader on medical emigration.

"Most of the best original work, and much of the most important clinical work, is done before the age of 40; and yet most of the key posts in our professional organisations are held by people well past that age."

That the key posts are held by people well over 40 is not the most distressing feature of medicine today, for good productive works can be accomplished by men other than those holding key positions and those in key posts can have sufficient foresight and imagination to appoint young enthusiastic men to their units. No, Sir, what is alarming is the fact that during the years when the medical man is full of ideas and enthusiasm he is spending every spare moment attempting to assimilate the whole ever-widening field of medicine by amassing innumerable facts so that he may not be found wanting at one or other of those now formidable competitive hurdles—the membership or fellowship. Until either is passed he cannot even step on to the first rung of the ladder which leads to a position where he can direct his abilities for original work into productive channels. That the first rung may be inaccessible is realised by the organiser of one correspondence course who says: "the M.R.C.P. may not get you a job, but at least it's nice to have."

Where would this country be in the fields of engineering or atomic physics if the young scientist spent year after year attempting to master the entire corpus of his subject in all its branches before being permitted to bring his enthusiasm and enterprise to bear on some promising avenue of work in his own branch? He succeeds by working hand in hand with colleagues skilled in allied scientific persuits.

The present system involving 6 years' medical study followed by one year's houseman apprenticeship, 2 years' Army service, and 3 or more years' S.H.O. and registrarship while working at modest salary with no security of tenure for the M.R.C.P. or F.R.C.S., before being eligible to step on to the road along which Peter Gurney tells Joe he must "do the right things in the right order with never a foot off the common path" is, I suggest, stifling initiative and leading to the loss of many of the country's best men by emigration.

In other scientific fields the man who has travelled widely and studied in many centres is greatly sought after; yet in medicine we have so far departed from Osler's censure of parochialism, that higher posts in many centres are now the preserve of those born and bred in that centre.

I submit that if Britain is to remain great in the field of medicine a change of heart in the profession is needed to eradicate those influences which now seem destined to stultify it.

Birkenhead, Cheshire. EDMUND J. RAFFLE.

STAPHYLOCOCCAL PERITONITIS IN THE NEWBORN

SIR,—In your issue of April 26, Dr. Beaven, of Christchurch Hospital, New Zealand, described 5 cases of primary staphylococcal peritonitis in the newborn. He pointed out that the clinical picture was comparatively constant. As the literature contains so few reports of this condition, a further case is perhaps worth recording.

A baby girl, aged twenty-three days, was admitted to the David Bruce Military Hospital on Oct. 12, 1958. There was a twelve-hour history of fretfulness and progressive abdominal distension, during which time one small soft white motion was passed.

She was acutely ill, pale and and listless, with grunting respirations. The abdomen was grossly distended and tympanitic, and palpation seemed to cause a good deal of pain. Only an occasional bowel sound was heard. The rectum contained a small amount of faeces the colour and consistency of zinc cream. The infant had not vomited, but aspiration of the stomach produced a quantity of heavily bilestained fluid.

Laparotomy was carried out by Prof. A. J. Craig. When the peritoneum was opened, thin pus under pressure gushed out. There was a generalised peritonitis, but a painstaking search failed to reveal local cause. The inflammation was most severe in Morrison's pouch. Peritoneal swabs grew *Staphylococcus aureus*, resistant to penicillin and chloramphenicol, but sensitive to other antibiotics.

There followed a stormy postoperative forty-eight hours. Intravenous hydrocortisone (100 mg.) was given shortly after return from the theatre, followed by a transfusion of 100 ml. of whole blood. A continuous intravenous infusion of tetracycline was then begun (1 mg. in 2 ml. of 0·2 *N* saline with glucose, running at the rate of 25 ml. per hour). Transient jaundice appeared on the second postoperative day, and a further 75 mg. of intravenous hydrocortisone was given. From the third day progress was steady and uneventful, if slow. Tetracycline was continued by intramuscular injection for two weeks. She was discharged from hospital on Nov. 12.

The similarity between this case and those described by Dr. Beaven is very close. The major diagnostic triad is marked abdominal distension, tenderness, and absent or greatly diminished bowel sounds. As the principal focus of inflammation was just below the liver, it was considered likely that the infection had come via the umbilicus in this particular patient.

Finally, the use of intravenous hydrocortisone deserves mention. In a desperately ill, collapsed patient suffering from an acute infection, I believe that this can be life-saving, and that it played a significant part in the recovery of this child.

David Bruce Military Hospital,
Imtarfa, Malta. K. VERNON JONES.

NEONATAL HYPERBILIRUBINÆMIA

SIR,—Your last issue contains two articles on neonatal hyperbilirubinæmia and exchange transfusion and also a leading article on the same subject. In discussing the total volume of the exchange transfusion you say:

"Their [Forfar and coworkers] main conclusion is that an exchange of 80 ml. per lb. completed in 1–1$^1/_2$ hours is safe and satisfactory. But, if this is so, the recommendation of Newns and Norton that the exchange should amount to 40 ml. per kg. must be wrong."

On referring to the article by Newns and Norton one reads on p. 1139 that "the amount of blood transfused was 160 ml. per kg. body-weight"—i.e., a recommendation very similar to that given by Forfar and his coworkers. Such inaccuracy in your leading articles is very distressing to those who of necessity must rely on

them and who have not the time in every case to study all the original papers which are quoted.

Bedford. R. G. MILLER.

*** We are obliged to Dr. Miller for drawing attention to our mistake. In sending our leader to press, we failed to take note of the correction made by Dr. Newns and Dr. Norton on their proof. We hope that this error, which we much regret, will at least serve to emphasise the important fact that the two groups of workers are really in close agreement. Line 20 of the second column on p. 1163 should begin "*eight* years"; and line 2 of the first new paragraph of this column should end "*18* mg." On p. 1164 the first new sentence should read: "Their main conclusion is that an exchange of 80 ml. per lb. completed in *100–110* minutes is safe and satisfactory." —ED. L.

EPIDEMIOLOGY OF NOCTURNAL ENURESIS

SIR,—In his interesting study of 20 enuretic children, Dr. Cust (Nov. 29, p. 1167) comes to the conclusion that a tendency to enuresis is inherited: his evidence, however, hardly shows more than that enuresis is familial. This important problem has been closely examined by a Scandinavian psychiatrist, Dr. Bertil Hallgren. In his large series,[1] Dr. Hallgren finds strong grounds for differentiating between a nuclear, primarily genetic, group and a non-genetic group, though, of course, in the nuclear group the degree and rate of manifestation of the genes is modified by environmental factors.

Dr. Hallgren's closely reasoned examination of the genetic evidence leads to the tentative conclusion that the mode of inheritance is either through a dominant major gene or through interaction of several genes with the environment. Though the mode of transmission is thus uncertain, Hallgren's data permit much closer scrutiny of the ætiological issues than any previous studies. In his monograph [1 2] a wider range of environmental factors is evaluated than Dr. Cust and other writers have been able to take into account.

London, S.W.13. HILDA LEWIS.

PATIENTS' CASE-NOTES

SIR,—I was interested to read about the unfortunate patient referred to in your issue of Nov. 29 (p. 1171) who "had read and copied the original pathological report (of cancer) which had been placed with her notes at the head of her bed". Lord Denning is quoted as saying that everyone must feel sympathy with the patient who, with the curiosity which most ordinary patients would display, had had a look at the notes over her bed, and was naturally very troubled.

I have been very interested in the attitude of patients to these notes, as a patient, as an employee of a hospital, and now as a medical student, and I can see nothing but harm resulting from their being available to the patient.

While it is to be deplored that a wrong diagnosis was made, surely it should be borne in mind that diagnosis is a matter of probability rather than certainty, and it would be foolish, especially in cases such as cancer, to wait until the diagnosis was sure before beginning treatment. The final result would have been much worse had it been a carcinoma.

All the anxiety and much of the unpleasantness could have been avoided if the records had been kept in a portable trolley, which could also house the X-ray photographs. Only the routine charts need be kept on the bed, and the trolley is easily available for the doctor's rounds, and for doctors and students working at a table in the centre of the ward. A further advantage is that the records, not being subjected to the knocks and handling which they get at the bed-head, would be less likely to be damaged or lost. This method is being used now at the Radcliffe Infirmary, Oxford, and seems to be proving generally acceptable.

Lincoln College, Oxford. J. R. SIMPSON.

TOXÆMIA OF PREGNANCY

SIR,—In his Blair Bell lecture [1] on toxæmia of pregnancy associated with hydrops fœtalis, hydatidiform mole, and hydramnios, Dr. J. S. Scott argued against the ætiological thesis of the uterorenal reflex in toxæmia of pregnancy. In doing so, he misinterpreted its essential point—the myometrial resistance to stretch against a distending force—and dealt with the effects of the distension factor alone. Since two-thirds of Dr. Scott's cases were in the multiparous, in whom resistance to stretch is minimal, and since he based his argument on a low arbitrary level of distension (25% lower than is authoritatively held to be the minimum amount constituting hydramnios), it is apparent that he was not remotely testing the relevance of the views I have advanced. Moreover, arguments based on a comparison between the incidence of pre-eclampsia in those selected cases and in the local general population can have no validity, until it has been adduced that the relative proportions of primigravidæ in the two groups are comparable. Dr. Scott's approach to the problem also allows him to deny that generalised œdema is of significance in toxæmia, so that by the exclusion of these cases his statistical arguments could be further supported. He admits excluding 30 cases with gross œdema: if they had been included (as is reasonable, and, in my view, essential), the incidence of toxæmia in his series would have been at least doubled, thereby destroying his statistically based argument.

Critical appraisal thus condemns his denigration of the uterorenal thesis, and there are many other points in his argument that are equally unsubstantial—notably, his incrimination of placental abnormalities as a cause of pre-eclampsia.

The abnormalities outlined are peculiar to the rarer accompaniments of pre-eclampsia and have never been found (outside them) in association with the primigravid state, in which the incidence of pre-eclampsia is unquestionably greatest. It follows, therefore, that they can have no ætiological significance, especially when it is realised that such placental changes have often been found in the absence of any toxæmic manifestation. Dr. Scott took refuge behind the suggestion that a variant of pre-eclampsia existed.

Jann,[2] whose earlier paper dealt with a similar topic, emphasised the importance of rapidly increasing uterine tension, thereby indirectly supporting the thesis of the uterorenal mechanism.

Placental hormones can be shown to have no primary ætiological significance in toxæmia, for their increased production is as evident in chorionepithelioma as in hydatidiform mole, yet they do not provoke pre-eclampsia in chorionepithelioma.

The placenta's part in toxæmia is seen to be negligible, once it is realised that eclampsia can arise post partum, and can recur in labour after its subsidence on the death of the fœtus days earlier.

On the other hand, resistance to stretch is associated with primiparity and with the fact that the degree of hypertension in pre-eclampsia associated with hydatidiform mole is proportional to the height of the fundus. Again, the striking improvement that often follows amniotomy in hydramnios can find no other explanation

1. *Acta psych. neurol. scand.* 1957, **32**, suppl. 114.
2. *ibid.* 1956, **31**, 379.

1. Scott, J. S. *J. Obstet. Gynaec., Brit. Emp.* 1958, **65**, 689.
2. Jann, R. *Arch. Gynäk.* 1954, **184**, 731.

than that the cause lies in the myometrium's resistance to stretch. It is the one single mechanism present in *all* the conditions associated with pre-eclampsia and is entirely sufficient to explain its signs.

London, W.1. JOHN SOPHIAN.

AN INJECTION UNIT INSTEAD OF THE HYPODERMIC SYRINGE

SIR,—Having read with interest Mr. Flood's important contribution of Nov. 22, I should like to confirm the enormous superiority of 'Ampins' over other methods of injecting solutions, based on our experience with some 80,000 ampins used at this hospital during the past eighteen months. Our routine practice is to give streptomycin in this way, and this accounts for most of the ampins used, although the same method is also used for opium alkaloids and pethidine.

In our experience the disposable units have these advantages:

(1) The need for a large syringe service, involving expensive equipment and additional staff, has been obviated.

(2) Time taken on injections in the wards has been much reduced with the consequent economy in staff.

(3) The dangers of buttock abscess and homologous serum jaundice have been abolished.

(4) Allergic reactions to streptomycin no longer arise in those giving the drug.

I believe that ampins represent the most important technical advance in therapeutics for many years. No-one who has ever used them would ever willingly return to the conventional syringe. There is undoubtedly wide scope for increasing the range of drugs which can be used in such disposable units.

Baguley Hospital, Wythenshawe, Manchester. T. M. WILSON.

S.H.M.O. POSTS IN PSYCHIATRY

SIR,—I should very much like to support the views expressed by Dr. Knox (Nov. 8) concerning the undesirable advertisement for S.H.M.O.s in psychiatry in one of the regional-board areas of this country. When Professor Kennedy [1] offered to give senior medical registrars a quick training in psychiatry I made a similar protest.[2] The idea that a membership or an M.D. thesis in general medicine has any bearing on psychiatry whatsoever is a fantastic fallacy.

William Alanson White said "that psychiatry, and the materials it has to deal with, is dealing with conditions that are *essentially* different from the materials with which general medicine deals". This is profoundly true. Patients whose symptoms are obviously psychogenic are often submitted to elaborate physical investigations, only to be referred to the psychiatrist as "functional" or "neurotic". These investigations have often been positively harmful to the patient or they have only served to convince him that he has some obscure organic disease. Diagnosis of psychological illness by exclusion is bad medicine and is just as harmful as the misdiagnosis of an acute abdomen and may, if the case in question is an endogenous depression, be as fatal.

The senior registrar with a higher medical qualification may, by the very nature of his training, have much to unlearn before he can become an experienced psychiatrist. There are, of course, exceptions. An S.H.M.O. appointment is a specialist appointment and should mean that the holder of such an appointment has a wide experience in the specialty concerned and is capable of diagnosing and treating with reasonable skill cases which are in his specialty.

The most important qualification for a specialist is adequate basic training (the evidence of which in this instance is the possession of a D.P.M. or equivalent qualification), together with wide experience—i.e., a minimum of five years in the specialty. If senior registrars wish to take up psychiatry, the Ministry must alter the regulation so that they may continue in that grade for a further five years.

1. Kennedy, A. *Brit. med. J.* 1956, ii, suppl. p. 5.
2. Kidd, H. B. *ibid.* p. 72.

Carlton Hayes Hospital, Narborough, near Leicester. H. B. KIDD.

THE MURUTS AGAIN

SIR,—The paper by Dr. Polunin and Dr. Saunders (Nov. 8) took me back to British North Borneo twenty-five years ago.

It recalled the Sunday-morning mass hookworm treatments, and the good humour of the victims. (One Monday morning the estate manager said to the mandore, "How are they all feeling today?" "Oh, Tuan, not so well. You see they had a disturbed night because of the barking of all those worms that the doctor let loose yesterday!") That the Muruts should have mass treatment seemed so simple in 1933. You only had to devise a medicine market (*tamu berobat*) and send in your report. Of course Government would welcome it and back you up!—How naif! How trusting! How uncorrelated with official reluctance to add even a little to the estimates.

May I paint the picture as I see it, though from hearsay this time, a quarter of a century later?

As regards malaria, this picture is the reverse of that in Malaya. McArthur [1] showed that, contrary to everyone's belief, including his own, *Anopheles leucosphyrus* is the vector, and not *A. maculatus*, and jungle clearances are *not* culpable but, on the contrary, highly beneficial.

"The methods of malaria control for Borneo", he wrote, "are cheap, simple, effective, and permanent, and go hand in hand with the economic development of the land". Also: "measures for the control of malaria there should contribute at the same time to economic prosperity".

I quote from his revolutionising paper published in your columns more than *twelve years ago*. Really, one asks oneself, what in Heaven's name have they been waiting for?

McArthur's own clearance work, which had been done in the three years before the war, was stopped by the Japanese occupation, and his own internment. It was apparently not resumed by the new Government, who used "residual house spraying". I confess ignorance, but I know that spraying house walls will not kill insects that alight only for feeding and then fly away immediately, being "impatient feeders".

If, as history suggests, the Muruts are not "in the book", it may be useless to go over the old ground again. Nevertheless, in view of the continuing depopulation described by Dr. Polunin and Dr. Saunders it might be a good plan to eliminate, or at least reduce, *A. leucosphyrus*, and *Plasmodium falciparum* in pregnant women and the newly born, if only *pour encourager les femmes*.

While I am grateful to them for their paper, it should, I think, have contained a reference to Campbell's report as Government medical consultant, Interior.[2] With Mr. Leese, the leading authority on estate labour in the country, Campbell placed the responsibility for introducing Javanese, highly infected with virulent subtertian malaria, squarely on the shoulders of the B.N.B. Chartered Company. They also fixed the date—i.e., 1925–27. I must, too, disagree with Dr. Polunin and Dr. Saunders when they say that "satisfactory medical care of the Muruts is impracticable because of their inaccessibility and sparse population no matter how much the Medical Department expands". Any reader who cares to send me one Straits dollar (2*s.* 4*d.*) will

1. McArthur, J. N. *Lancet*, 1946, ii, 117.
2. Campbell, C. G. Medical Reports, British North Borneo, Singapore, 1931.

receive post free a reprint of my paper,[3] and can judge for himself!

The story goes that an estate coolie in Johore once complained to his manager that a tiger which constantly infested the estate had carried off and devoured his infant. He wanted the tiger trapped. The manager demurred, because *he* wanted to bag it one fine day. "Besides", he went on, "you are both young. You will have some more children". The Malay replied, "Does the Tuan really imagine that my wife and I are going on producing more children just to feed his tiger?"

I am reminded of this by the note of optimism on which Dr. Polunin and Dr. Saunders end their paper. All will yet be well, they imply, even if, out of every fifty "liveborn offspring of surviving Murut women" just under 20, or 19·35, fall to the tiger; for, praise to Allah, "such wastage is compatible with an increase in population, given normal child production". But suppose the tiger's appetite increases pari passu?

Generalised statistics would have concealed the 100% "wastage" in many villages, in which infants were born with splenomegaly and quickly succumbed.

I have been too long out of the Interior. Perhaps someone else will induce a change of heart in high places. I shall regard the removal of poll tax as the sine-quanon—the acid test. It is as bad a tax as our old window tax, and was responsible for the disaster.

Rochester. A. J. COPELAND.

SKIN FRAGMENTS REMOVED BY INJECTION NEEDLES

SIR,—The article by Professor Choremis and his colleagues,[4] later discussed in a leading article,[5] is relevant to the subject studied by Mr. Gibson and Dr. Norris (Nov. 8). Professor Choremis described 6 patients with intraspinal epidermoid tumours which were attributed to the implantation of epithelial cells several years earlier when the patients had been given repeated lumbar punctures for the treatment of tuberculous meningitis with streptomycin. A needle without a stylet had been used for these punctures.

It seems important that lumbar-puncture needles should have an accurately fitted stylet, at least when an injection is being given.

Ruchill Hospital, Glasgow. H. G. EASTON.

STRANGULATED UMBILICAL HERNIA IN CHILDREN

SIR,—Dr. Read's letter of Oct. 18 brought to my mind the case of a 13-month-old Arab girl who came under my treatment at the Civil Hospital, Omdurman, in the Sudan, in June, 1954.

The parents had noticed a small umbilical swelling, soft and reducible, since birth. Just over twenty-four hours before admission the swelling had become hard, painful, and later a little dark in colour, and the child's abdomen had become slightly distended.

She had a central umbilical strangulated hernia, just over an inch in diameter at its base. At operation the sac was opened through a vertical incision and the strangulation released by incision of the anterior rectus sheath. The sac contained part of the circumference of a very mobile cæcum, gangrenous but not perforated. The gangrenous portion was excised, the cæcum closed and returned to the peritoneal cavity. The hernia was repaired.

The case had a tragic sequel. After eight days of uneventful convalescence, she developed tetanus and died two days later—an unpleasant reminder of the need for prophylactic immunisation against tetanus in any patient with gangrene or advanced closed-loop obstruction of the large bowel.

Department of Surgery, Edendale Non-European Hospital, Pietermaritzburg. THEUNIS COETZEE.

THE CARDIORESPIRATORY SYNDROME OF EXTREME OBESITY

SIR,—As a psychiatrist I read with interest the competent article by Dr. G. M. Berlyne (Nov. 1) on a patient with extreme obesity, but was profoundly disappointed to find no assessment of the psychological factors in the syndrome. In effect, Dr. Berlyne ignores what appears to be the main clinical abnormality. It is as if a confused patient with very advanced anæmia were reported in terms of psychiatric findings without mentioning blood abnormalities.

Understanding of psychosomatic syndromes depends on the doctor achieving good clinical perspective. I cannot help suggesting also that medical journals nowadays have a duty to influence contributors to be comprehensive whenever the topic requires it.

Romford, Essex. RICHARD W. CROCKET.

SKIN ANTISEPTICS

SIR,—As a skin antiseptic, iodine (2% in 70% alcohol) (mentioned in your annotation of Nov. 29) is difficult to beat and might well serve as a yardstick when assessing other skin antiseptics. 0·2% iodine in strong methylated spirit is probably as effective, as an antibacterial application, and does less damage to the skin itself.

Watery solutions of antiseptics are much less effective than the same antiseptics dissolved in alcohol. Alcohol by itself, 70% and over, is a powerful bactericide when applied freely to the skin. This was shown by Story.[1]

I have found chlorhexidine (Hibitane) disappointing as a skin antiseptic. The form recommended by Lowbury[2] (0.5% in 70% alcohol) may well be effective, particularly if surgeons, after the soap and water scrub, soak their hands in the medicated spirit for sixty seconds, and then allow their hands to dry in air, before donning sterile gloves. The proper sterilisation and storage of glove powder is very important.

The suppression of hand-borne infection is important; older well-tried methods are often preferable to the *dernier cri*.

Epping. FRANK MARSH.

BANTING UP TO DATE

SIR,—If it is put to me that there would be less obesity if there were no sugar and no chocolate bars, I must agree. This is not a view I am trying to demolish.

If I have not shown that the terms "a natural diet" or "a natural way of life" have little meaning as applied to *Homo sapiens*, then I can think of no way to reinforce my argument. If I have not shown that the views put forward have nothing to do with Darwinism, then I can only suggest the radical measure of actually reading Darwin to those who still believe they have. As to the alleged robust health of the natural man, what about kwashiorkor? Is a vegetable diet the best one for the African? The food of different tribes varies greatly and the healthiest is probably the carnivorous Masai.

I should be sorry if anyone were to look with hope or expectation beyond hard facts into the fog of social medicine. This ugly term should be discouraged. It is vague and can be made to embrace whatever its users choose. It requires emphasis that none of the benefits of the Welfare State can be

3. Copeland, A. J. *Lancet*, 1935, i, 1233.
4. Choremis, C., Economos, D., Papadatos, C., Gargoulas, A. *ibid.* 1956, ii, 437.
5. *ibid.* 1957, i, 358.

1. Story, P. *Brit. med. J.* 1952, ii, 1128.
2. Lowbury, E. J. L. *Practitioner*, 1957, **170**, 489.

credited to anything more than good and kind organisation and good and kind medicine.

The game is given away in the last sentence of Dr. Vickery's letter last week. "The maximum practical wholeness and freshness" is the key phrase. I leave it to the judgment of your readers whether this is philosophy or whether it is science. For me it qualifies for inclusion in Hippocrates' "these things belong more to literature than to medicine". For me there is here a primitive belief in the quintessence, in the "life force", the substances which the alchemists tried to isolate, which are the substances of life itself and a link between Heaven and Matter. To this attitude we owe not the enrichment of margarine which abolished rickets but the distillation of alcoholic drinks. I am a teetotaller, however, and if most of the bread I eat is wholemeal and baked by my wife, it is because I prefer the taste. I look to hard facts and not to pneumatics where I can.

When Vesalius placed observation above scholastic rationalism and above mysticism, the medical renaissance began. We must never forget the hard road our predecessors came and never put our faith in philosophers.

Catterick, Yorks. D. HAMILTON.

ALDOSTERONE ANTAGONISTS

SIR,—Those who read only the summaries of papers will find the article by Dr. Kerr and his colleagues (Nov. 22) misleading. After describing their failure to obtain significant loss of weight with SC 8109 in three patients with ascites due to cirrhosis, they state that "the brief trials described here suggest that it will be useful in controlling ascites resistant to standard treatment". In two cases impressive alterations in the urinary Na/K ratio occurred, but the greatest excretion of sodium after treatment was only 40 mEq. per day, and even in this case the total negative balance appears to have been less than 100 mEq. From these results, and the large amounts of SC 8109 which were required to obtain them (2·5 g. of steroid in a five-day course), we would hazard a guess that this drug will prove to be of little value in the treatment of ascites resistant to the usual measures.

However, these aldosterone antagonists might be expected to have value in the diagnosis of primary aldosteronism, and Salassa and his colleagues [1] have reported observations on one patient given SC 8109. Recently we have given the same preparation to a 35-year-old woman with severe hypertension and a hypokalæmic alkalosis, subsequently found at operation to have an adrenal cortical adenoma.

Administration of 500 mg. of SC 8109 in sesame oil [2] intramuscularly daily for three days, while the patient was receiving a constant diet (Na 153 mEq., K 51 mEq. per day) was accompanied by a marked increase in urinary Na/K ratio from 1·6 to 7·2, but total changes in external electrolyte balance were small (plus 52 mEq. K, no change in Na for the first three days; or plus 69 mEq. K, minus 21 mEq. Na if the two subsequent days are included). On this diet the excretion of aldosterone was known to be increased (24·6–33·4 μg. per day by the method of Ayres et al.,[3] normal range 5–23 μg. per day), and an aldosterone antagonist might therefore have been expected to induce changes in urinary composition.[1] The excretion of aldosterone did not increase further after SC 8109, which suggests that changes in electrolyte balance were not sufficiently great to provoke further adrenal secretion of aldosterone.

These few observations suggest that aldosterone antagonists deserve further study in relation to the diagnosis of states of abnormal aldosterone secretion. They cannot of course distinguish between "primary" and "secondary" hyperaldosteronism and are also unlikely to help in the diagnosis of those patients with "primary aldosteronism" who excrete normal amounts of aldosterone.[4] Moreover, these steroids are not inhibitors of aldosterone alone, but block the effects of deoxycortone and perhaps other mineralocorticoids as well.[5] This lack of specificity may not be entirely a disadvantage and could be of value in the study of syndromes associated with increased secretion of mineralocorticoids other than aldosterone.[6 7]

Departments of Medicine and Pathology, University of Manchester. OLIVER WRONG
A. H. GOWENLOCK.

1. Salassa, R. M., Mattox, V. R., Power, M. H. *J. clin. Endocrin.* 1958 **18**, 787.
2. Kindly supplied by Dr. G. R. Venning, of Messrs. G. D. Searle.
3. Ayres, P. J., Garrod, O., Simpson, S. A., Tait, J. F. *Biochem. J.* 1957, **65**, 639.
4. Chalmers, T. M., Fitzgerald, M. G., James, A. H., Scarborough, H. *Lancet*, 1956, i, 127.
5. Kagawa, C. M., Cella, J. A., Van Arman, C. G. *Science*, 1957, **126**, 1015.
6. Eberlein, W. R., Bongiovanni, A. M. *J. biol. Chem.* 1956, **223**, 85.
7. Luetscher, J. A. *Ann. intern. Med.* 1958, **48**, 1424.

Dr. MARIE STOPES

Mr. IAN PARSONS, chairman, the Hogarth Press, writes:

"By arrangement with the executors of the late Dr. Marie Stopes we have commissioned Mr. Keith Briant to write her official biography. We shall be most grateful if any of your readers who possess letters from Dr. Stopes, or who could provide personal recollections of her, would be kind enough to make them available to Mr. Briant through us, at 40–42, William IV Street, London, W.C.2. All original documents will be carefully copied and returned without delay."

Miss ELIZABETH SMART writes:

"I am writing a book about the character, life, and struggles of the late Dr. Marie Stopes. Any help from your readers in the form of letters, reminiscences, press cuttings, or other relevant information would be most gratefully received.

Any items lent will be treated most carefully and returned promptly. They may be sent to me at 9, Westbourne Terrace, London, W.2, or c/o Barrie Books, 3–4, Clement's Inn, London, W.C.2.

Obituary

FRANK GRAHAM LESCHER

M.C., M.A., M.D. Cantab., F.R.C.P.

Dr. Graham Lescher, senior consulting physician to the Derbyshire Royal Infirmary, died on Nov. 12 at the age of 70.

He was born in London and was educated at Stonyhurst College and Caius College, Cambridge. After taking the natural sciences tripos in 1910 he went to St. Bartholomew's Hospital, and he qualified in 1913. He held house-appointments at Barts and at the West London Hospital before he enlisted in the R.A.M.C. As medical officer to a field ambulance he won the Military Cross with two bars. He was taken prisoner in 1918. After he was demobilised he took the M.D. in 1919 and settled in practice in Derby. The following year he was elected physician to the Derbyshire Royal Infirmary, and he later joined the staffs of the Derby City Hospital and the Burton-on-Trent General Infirmary. He took the M.R.C.P. in 1934 and was elected F.R.C.P. ten years later.

His interest in military affairs continued, and he was A.D.M.S. to the 46th North Midland Territorial Division. In the late war he was a group medical officer of the Emergency Medical Service. He took an active part in the scientific societies of the Midlands, and in 1945 he was president of the East Midlands Society of Physicians.

A colleague writes:

"Starting in general practice, Lescher's chief enthusiasm was for his hospital work and eventually he only undertook consulting work. He was experienced as a general physician with some extra knowledge of neurology. His opinion was valued by his colleagues and by general practitioners over a wide area. There must be many doctors in practice who have profited by the experience they gained as his house-physician. He was an exceptionally hard worker, but found time for golf and fishing."

Dr. Lescher leaves a widow and two daughters.

Notes and News

CLINICAL RESEARCH AT THE MIDDLESEX

IN 1953 the Institute of Clinical Research was opened as part of the Middlesex Hospital Medical School; and the hospital's clinical research committee have made grants from the income of the endowment fund to promote research in the institute. Each research-worker is sponsored by one of the Middlesex consultants, who supervises progress. A demonstration held at the institute on Nov. 25 made plain the value of this enterprise and showed visitors something of the achievements of this more deliberate approach to clinical research.

Good ideas are essential to profitable research, but unhappily not all good ideas are equally fruitful. Dr. H. L. Marriott and Dr. P. H. Friedlander had the good idea of finding out more about the sort of foods that people say "disagree" with them; and they investigated the effects of such foods in a group of non-ulcer patients. The results were variable and inconclusive: under the conditions of the inquiry, some people ate the "disagreeable" food with relish and no indigestion; others could not stomach the "control" food without discomfort. The work on autoantibodies in thyroid disease, by Dr. Deborah Doniach and her colleagues, is among the most exciting developments of recent years, and the examination of its implications will be followed with attention. The demonstration included several endocrinological researches by Dr. J. D. N. Nabarro and his colleagues: they have been studying urinary 17-ketosteroid excretion after the rectal administration of hydrocortisone, the metabolic and clinical effects of 9α-fluoro-16-methyl prednisolone, and the endocrine effects of pituitary-stalk section. Elsewhere Prof. Alan Kekwick (who is in administrative charge of the institute), Mr. G. L. S. Pawan, and their colleagues illustrated the encouraging progress they have made in their study of the fat-mobilising activity of urinary extracts; and Dr. F. Ray Bettley and Dr. E. Donaghue described their investigation into the important subject of how soap can irritate the skin. In these and the many other pieces of work demonstrated last week, much ingenuity and enthusiasm were apparent.

APPROVED NAMES FOR DRUGS

THE British Pharmacopœia Commission has issued the following new supplementary list of approved names:

Approved name	*Other names*
Anisindione	2-*p*-Methoxyphenylindane-1 : 3-dione Miradon
Cloquinate	Chloroquine di-(8-hydroxy-7-iodoquinoline-5-sulphonate) Resotren
Dieldrin	Product containing 85% of 1 : 2 : 3 : 4 : 10 : 10-hexachloro-6 : 7-epoxy-1 : 4 : 4*a* : 5 : 6 : 7 : 8 : 8*a*-octahydro-*exo*-1 : 4-*endo*-5 : 8-dimethanonaphthalene
Halopenium Chloride	4-Bromobenzyl-3-(4-chloro-5-methyl-2-*iso*propylphenoxy)-propyldimethylammonium chloride
Isopropamide Iodide	(3-Carbamoyl-3 : 3-diphenylpropyl)methyldi*iso*propyl-ammonium iodide Darbid; Tyrimide
Mestanolone	17β-Hydroxy-17-methyl-5α-androstan-3-one Androstalone
Methsuximide	*N*α-Dimethyl-α-phenylsuccinimide Celontin
Noscapine	Narcotine Coscopin; Nicolane
Poldine	2-Benziloyloxymethyl-1-methylpyrrolidine Nacton is the methosulphate
Prampine	*O*-Propionylatropine PAMN is the methonitrate
Promethazine Theoclate	*N*-(2-Dimethylamino-*n*-propyl)phenothiazine salt of 8-chlorotheophylline Promethazine chlorotheophyllinate Avomine
Sulphamethoxypyridazine	3-*p*-Aminobenzenesulphonamido-6-methoxypyridazine Kynex; Lederkyn; Midicel
Sulphatolamide	*p*-Aminobenzenesulphonylthiourea salt of *p*-sulphamoylbenzylamine Marbadal C

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Proprietary name, &c.	*Approved name reference*
Androstalone	Mestanolone
Avomine	Promethazine Theoclate
Celontin	Methsuximide
Coscopin	Noscapine
Darbid	Isopropamide
Kynex	Sulphamethoxypyridazine
Lederkyn	Sulphamethoxypyridazine
Marbadal C	Sulphatolamide
Midicel	Sulphamethoxypyridazine
Miradon	Anisindione
Nacton	Poldine
Narcotine	Noscapine
Nicolane	Noscapine
PAMN	Prampine
Promethazine Chlorotheophyllinate	Promethazine Theoclate
Resotren	Cloquinate
Tyrimide	Isopropamide

LIPID METABOLISM AND DISEASE

WHATEVER the level of cholesterol in librarians' serum, there is certainly a sharp rise in the level of the literature on this subject arriving on their shelves. Three new publications [1–3] have lately appeared and all can be recommended, though they overlap considerably. One investigator appears in all three and several in two. The first two volumes have the merits and defects of transcripts of conferences. Any reader is sure to find in either at least two or three articles containing valuable information new to him, but these are diluted by the obscure and the apparently trivial. The *British Medical Bulletin* is a literary work from the start and has been well planned. It covers rather more ground than the other two in a third of the space and the 13 contributions are well balanced. For the general reader seeking an account of the enormous changes that have taken place in the past ten years in views of fat metabolism and its relation to disease, this is the thing to get.

MEDICAL FILMS

Two new films on cardiac surgery have been completed—one for the non-specialist, the other for the specialist.

Treatment of Cardiac Arrest (16 mm., sound, colour, 9 minutes, Great Britain, 1958) [4] has been made at Guy's Hospital with the collaboration of Sir Russell Brock and Dr. D. N. Ross.

It opens with the reminder that cardiac arrest may occur during major or minor surgery or during cardiac catheterisation, and that, as the circulation must be restored in one minute, time should not be wasted by injecting drugs or applying a stethoscope. Fifteen seconds should be allowed for confirming the diagnosis, fifteen seconds for establishing oxygenation through a free airway, and the remaining thirty seconds for opening the chest and massaging the heart. The procedure is then shown in detail; the absence of carotid pulsation and of a recordable blood-pressure confirms the diagnosis, oxygen is administered under pressure, and the left chest is incised in the fifth intercostal space with any sharp instrument. The method of massaging the heart with the flat of the hands is demonstrated. Now the trachea can be intubated and there is time to plan the next stage. Some useful instruments are listed, and the adoption of a more sterile procedure is suggested. The pericardium is opened; and the difference between asystole and fibrillation, with the treatment of each, is discussed. The film ends with a summary.

This is an excellent film giving a concise, clear statement on the procedure to be adopted in an emergency. A sense of urgency is maintained until massage is started, after which the attempts to restore the heart-beat are commendably unhurried. The procedure described follows closely that recommended by

1. Essential Fatty Acids: proceedings of the fourth international conference on biochemical problems of lipids. Editor: H. M. SINCLAIR, M.D. New York: Academic Press. London: Butterworth. 1958. Pp. 268. 50s.
2. Chemistry of Lipids as Related to Atherosclerosis: a symposium. Editor: IRVINE H. PAGE, M.D. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1958. Pp. 342. 63s.
3. Metabolism of Lipids. Editor: G. POPJAK. *British Medical Bulletin*, 1958, **14**, pp. 197–278. 20s.
4. Information on availability may be had from the Department of Medical Illustration, Guy's Hospital, London, S.E.1.

Dr. Claud S. Beck in his film,[5] and there is little to choose between these two first-rate productions. The latest one can be recommended to all medical practitioners requiring a brief, didactic demonstration of the routine.

Atrial Septal Defect (16 mm., sound, colour, 35 minutes, Great Britain, 1958),[6] which shows the ætiology and diagnosis of the lesion, anæsthesia with hypothermia, and surgical correction, was made with the cooperation of Mr. T. Holmes Sellors, Dr. D. Evan Bedford, and Dr. B. A. Sellick at the Middlesex Hospital.

The film opens with some statistics on the incidence of atrial septal defect, the types of defect, and the resulting symptoms and signs. A quarter of the film is then devoted to premedication, induction and maintenance of anæsthesia, and the method of reducing the patient's temperature to about 28°C. In the remaining half of the film the surgery is shown in detail, and reference is made to the anæsthesia, temperature, pulse, blood-pressure, and electrocardiographic recordings at each stage of the operation. Finally, the postoperative routine is mentioned.

The film gives a clear account of the technique used at the Middlesex Hospital; the exposition is well planned and the commentary is delivered well; but the colour photography is below standard in places.

University of Oxford

On Nov. 22 the degree of D.M. was conferred on the following:

Leon Bagratuni, R. H. Balme, G. A. Neligan (in absentia), M. A. Smith.

University of Manchester

Because of his duties as president of the Royal College of Physicians of London, Prof. Robert Platt has asked to be relieved of his full-time chair of medicine and the directorship of the department. He will continue to hold a chair with part-time duties.

Dr. D. A. K. Black, at present reader in medicine in the university, has been appointed professor of medicine and director of the department from Jan. 1.

Dr. Black was a student of the University of St. Andrews, where he graduated in science in 1933 and obtained the degrees of M.B., CH.B. with distinction in medicine and surgery in 1936. He held house-appointments in the Dundee Royal Infirmary and for a year he was a demonstrator in pathology at St. Andrews. From 1937 to 1940 he held a Medical Research Council fellowship. From 1940 to 1942 he was a Beit research fellow, concurrently holding a clinical assistantship in the Radcliffe Infirmary, Oxford. From 1942 to 1946, he served with the R.A.M.C. and did valuable work on sprue with the Army research team at Poona. On demobilisation he was appointed to a lectureship in medicine at Manchester. He was promoted to the status of reader in 1953, and the same year he gave the Goulstonian lectures to the Royal College of Physicians. His research has been concerned with the application of physiological knowledge to clinical problems and in the therapeutic measures which follow from an increased understanding of the mechanism of syndromes and diseases. His published work includes monographs on fluid balance and sodium metabolism and papers on renal function and electrolyte metabolism.

Queen's University, Belfast

Mr. R. B. Welbourn has been appointed to a personal chair in surgical science.

Mr. Welbourn, who is 39 years of age, studied medicine at Cambridge and Liverpool and graduated M.B. Cantab. in 1942. After serving as a surgeon in the R.A.M.C. he became senior registrar to Prof. C. A. Wells in the Liverpool Royal Infirmary and then research assistant in the department of surgery in the University of Liverpool. In 1951 he was appointed lecturer in surgery at the Queen's University and was given leave of absence for a year during which he held a fellowship in surgical research at the Mayo Foundation. In 1956 he was appointed reader in surgery. He is also surgeon to the Royal Victoria Hospital, Belfast. In 1957 he was a Hunterian professor of the Royal College of Surgeons. His published work includes papers on gastric, adrenal, and experimental surgery.

Dr. P. C. Elmes has been appointed lecturer in therapeutics and pharmacology, and Dr. W. G. Millar lecturer in midwifery and gynæcology.

5. See *Lancet*, 1958, i, 1400.
6. Available free from May & Baker Ltd., Dagenham Essex.

Royal College of Physicians of London

On Tuesday, Jan. 13, at 5 P.M., at the college, Pall Mall East, S.W.1, Dr. H. R. Vickers will give the Watson Smith lecture. His subject will be the place of dermatology in a general hospital.

Royal College of Surgeons in Ireland

On Nov. 21 the honorary fellowship of the college was conferred on Sir Walter Mercer.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council on Nov. 29, with Prof. A. M. Claye, the president, in the chair, the William Blair-Bell lectures for 1959 were awarded to Winifred J. A. Francis and M. L. Paterson, and the Green-Armytage travelling scholarship for 1959 to J. C. S. Leverton.

Gouri Sankar Mandal and Ajit Kumar Sarkar were admitted to the membership.

The diploma in obstetrics was awarded to the following:

Margaret Aitken, Patricia M. Akers, Barbara A. Alcock, K. M. Allman, Joan Andrews, J. L. Andrews, H. T. Apsimon, A. E. Ashcroft, P. J. Ashton, W. M. Baggott, J. B. Ball, A. J. Barratt, Dorothy F. Bate, D. E. R. Bateman, M. A. Beale, George Beaumont, W. A. Beck, P. G. Benson, G. H. Berry, J. F. Bird, Arthur Booth, Monica M. Brain, F. R. Braithwaite, E. W. Brentnall, J. F. Brooks, R. L. Buchanan, Patricia M. Bucknole, J. M. B. Burn, Eunice R. Burton, A. L. Bussey, Margaret A. Butler, L. R. Butler-Manuel, A. R. R. Cain, Pamela J. H. Callaghan, P. F. Cameron, Dorothy C. Campbell, William Caplan, Kamla Chandiramani, Kenneth Chapman, Chun Hian Chong, E. M. Clark, Richard Clark, R. W. Clark, B. M. G. Clarke, Eleanor M. Clarke, J. C. Clarke, J. W. Clarke, A. D. Cole, J. A. Collie, R. A. Colwell, Johanna Connell, P. J. Constable, Anna Cope, J. D. Corcoran, Gerald Corney, D. G. Craig, J. L. Currie, J. deB. J. Dade, J. O. Dalrymple, T. P. Daly, R. J. Daniels, Alan Darnborough, J. K. Dauncey, I. E. Daunt, G. A. Davenport, D. B. A. L. Davies, H. W. C. Davies, Pamela A. Deane, Dhruv Vrat Dhupa, D. G. Dingle, Piyatissa Dissanayake, Cynthia M. Dixon, St. John Dowling, P. M. Dunn, M. D. L. Eakin, A. M. Easty, R. W. Edmonds, Brenda A. P. Edwards, N. A. Elvin, Davina C. Embleton, Solomon Ende, G. L. Evans, R. R. Evans, D. K. Fairweather, G. W. M. Faris, J. H. N. Ferris, D. T. Finlay, Elizabeth C. Finn, Geoffrey Finnemore, F. L. P. Fouin, G. H. Fowler, A. H. Frame, M. J. N. Frohn, Peter Garmon-Jones, J. N. Garrett, Susan George, W. H. S. George, J. H. Gervis, Shakuntala Manhar Gheewala, Jennifer M. D. Gibson, W. O. Goldthorp, Dulcie A. F. Goonewardena, R. L. Grant, R. D. Gray, R. I. Graymore, Ian Gregg, Aloka Gupta, D. W. Hall, Ursula H. Hamilton, H. W. I. Hanan, Susan E. A. Hart, Alexander Haskell, T. D. Haskins, Abubakr Mustapha Hassim, M. J. Herlihy, Frank Heyes, M. D. Hickman, N. A. Hiley, Jennifer Hill, Pamela M. Hogg, M. F. Holding, Aina Jautrite Holt, John Homi, Rachel S. L. Hood, C. V. Horn, Frank Horsfield, B. L. Hoskyns, N. R. Houlston, J. K. Houston, B. G. Howarth, H. J. Hoyland, P. J. E. Hubbard, C. N. Hudson, D. I. Hughes-Davies, David Hull, R. M. Humble, J. M. Hutchison, D. C. Hutfield, R. H. Huzzey, Christine M. Hyslop, Nalini Mahadeo Inamdar, G. A. Irving, Elizabeth J. Ives, P. N. Jarvis, Hilda Jayawardena, B. L. Johnson, D. S. Jones, Gwendolyn A. Jones, J. K. L. Jones, Margaret Jones, Anusuya Kalyanaraman, Russell Keeley, J. C. Kennedy Smith, M. G. Kielty, N. D. Kilpatrick, H. A. P. King, R. G. P. King, R. A. Lacey, R. D. Last, A. R. Lea, Shirley A. Leslie, J. W. Lewis, Patricia A. C. Locken, J. A. Lofting, B. E. Lomax, H. J. A. Longmore, John Longstaff, Sheila Luthra, I. J. MacBean, J. G. Macdonald, G. J. R. McHardy, Angus Macinnes, K. J. Mackay, Harriet B. MacKinnon, James McMichael, D. P. Mason, Shanti Mathur, A. E. H. Mence, H. C. Meredith, W. K. Merrifield, M. D. Middleton, J. K. Mills, Frances F. Milne, J. A. Mitchell, R. J. R. Moffat, Ann H. Montford, Terence Morley, D. C. Morrell, Peter Morris, John Morrison, K. F. C. Muncey, Mary C. Munday, Aileen C. Munro, D. S. Munro, P. J. S. Murray, Pamela M. Mylward, B. R. Neill, E. M. Newton, Nora M. Norris, T. D. Nundy, A. F. O'Grady, Olusola Adewole Ojo, D. J. O'Shaughnessy, Jean B. Owens, Sisir Kumar Panja, M. E. Parry. D. G. Paskin, Rajnikant Ishwarbhai Patel, W. G. Paterson, R. S. Peachey, J. F. Perren, G. D. Phillips, Gordon Phillips, Hazel M. Phillips, S. G. Phillips, A. J. Platts, M. R. K. Plaxton, Ann M. Pocock, C. R. Porteous, Glyn Priddle, Saroja Ramaswamy, Dorothy E. Robb, Iorwerth Roberts, N. G. Roberts, Shirley B. Robertson, Jayatissa Nalin Rodrigo, P. S. Rolland, I. G. Ross, Abha Rani Roy, J. A. Rumble, J. G. B. Russell, N. E. Rust, Sushila Sarin, Hary Savery, Palepu Savithri, J. V. Sawdy, J. B. Sayer, T. D. Sayer, Maria Schaffner, S. C. C. Scott, R. J. Sellick, Amhmed Abu-el-Futuh Shandall, N. W. Shephard, M. A. Shields, Micheal Shillito, Yehouda Shirazi, M. W. Sleight, W. D. Smith, Shirley M. Snead, K. G. R. Somer, D. M. Sopher, S. P. Spiers, J. H. Stewart, Jack Strahan, E. W. Sturton, Suchil K. Suppal, D. A. Swales, N. D. V. Swallow. J. G. Tees, Pamela M. Thorne, T. M. Tibbetts, W. S. H. Tow, A. S. Townsend, Leslie Tragen, R. F. Tuckett, Paruvangada M. Uthappa, J. A. M. Vasey, J. F. Walker, Margaret M. Walshe, K. H. Warden, Judith C. R. Wardle, R. S. Wardle, R. W. Ware, A. R. Warner, C. G. Waters, A. N. Watson, Gillian A. Watson, D. A. L. Watt, Ian Watts, Paul Wellings, H. J. O. White, D. H. Williams, Peter Wolstencroft, C. D. Wooding, S. J. P. Woods, T. K. W. Woolacott, P. N. Wormald, A. J. Zuckerman.

Royal Society of Medicine

From the money contributed by doctors throughout the Commonwealth as a present for his eightieth birthday Lord Nuffield has given this society £3500 to set up a Nuffield lecture.

British Medical Association

Brackenbury Prize (*£100*).—The Problem of the Ageing Population has been chosen as the subject for this prize for 1960. Further information can be had from the secretary of the Association, B.M.A. House, Tavistock Square, London, W.C.1.

Prospective Cytology Service at Barts

Establishment of a cytology service for the early diagnosis of cancer is under discussion between the Corporation of London and the governors of St. Bartholomew's Hospital. Details of the scheme are to be issued, but some time may elapse before it can start.

World Health Organisation

Dr. Nicolay Grashchenkov, formerly chairman of the medical research council of the U.S.S.R., has been appointed assistant director-general in succession to Dr. W. Aeg. Timmerman, who has reached retirement age.

Dr. Grashchenkov was born in 1901 in a village of the Smolensk region and took his medical degrees at the University of Moscow. In 1938 he was appointed to the chair of neurology at the first Moscow Medical Institute. He has been a member of scientific missions to England and the United States and a delegate to the last two World Health Assemblies.

Samaritan Hospital For Women, London

The outpatient department of this hospital has been extended on a site beside the hospital at a cost of £27,000. The gynæcological work of St. Mary's Hospital has lately been transferred to this hospital, and, to expedite building, the board of governors have financed the scheme from their endowment funds.

The original building has been remodelled to provide an improved waiting-room, and two history rooms for registrars, separated by a folding partition. Thrown together these two rooms can be used for lectures and film demonstrations. There is also a canteen, and rooms for students and for the sister. The ground floor of the new building has a consultants' history room, a larger room for teaching, and four examination cubicles, each with two dressing cubicles for patients, and three steam-operated sterilisers. The first and second floors continue the old building and provide seven additional staff bedrooms on each floor. In the large basement there is space for the records not in daily use.

New Hospital Unit for Mentally Ill

Halliwick Hospital, New Southgate, which was opened by the Duchess of Kent on Nov. 27, is built in the grounds of Friern Mental Hospital. It will be closely associated with Friern, and most of the staff and some of the services will be common; but it is not legally part of the larger hospital and it will not be designated as a mental hospital under the Lunacy and Mental Treatment Acts. It will take, by informal admission, stort-stay neurosis patients and patients in the early stages of psychotic illness from the Friern catchment area.

It has 152 beds, and with its equipment has cost £260,000. It will have full treatment facilities for all patients whom it admits. The intention is that it should have a larger staff than is usual in a mental-hospital unit of this size and should aim by intensive treatment to secure as speedy a return to the community as possible for its patients. It will be closely linked with community services, and some patients will attend the hospital for active treatment and rehabilitation during the day but return home at night. It is also intended to provide out-patient sessions in the evening so that patients may continue in their normal employment with as little disruption of their normal life as possible.

A meeting of the Biochemical Society will be held on Friday, Dec. 12, at 2 P.M., at St. Bartholomew's Hospital Medical College, Charterhouse Square, London, E.C.1.

The Ministry of Pensions and National Insurance, continuing to gather statistics about sickness and injury among the insured working population, has issued a *Digest of Statistics Analysing Certificates of Incapacity in 1955-56* which includes a table comparing the trend of different causes of incapacity since 1951. These figures may be had on application to the Statistics Division of the Ministry, 10, John Adam Street, London, W.C.2.

CORRIGENDUM: *Staphylococcal Diarrhœa.*—We regrettably introduced an error into Dr. Warren Crowe's letter last week: the date in the opening sentence should have been 1939–45.

Appointments

REES, LYN T., M.B., B.SC. Wales, F.F.A. R.C.S., D.A.: consultant anæsthetist, Welsh Regional Hospital Board and United Cardiff Hospitals.

WIGFIELD, W. J., M.B. Cantab., D.P.H.: senior assistant M.O.H. and school M.O., Middlesbrough, Yorkshire.

Diary of the Week

DEC. 7 TO 13

Monday, 8th

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Bertil Josephson (Stockholm): Examination of Renal Function in Man by Renal Vein Catheterisation.

POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12
4 P.M. Prof. Harold Scarborough: Purpura.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
4 P.M. Sir Samuel Bedson: The Psittacosis-lymphogranuloma Group of Infective Agents. (First Harben lecture.)

Tuesday, 9th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. W. S. C. Copeman: Medical Practice in the Tudor Period—1. The Evolution of the Profession. (First of two FitzPatrick lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. L. W. Proger: Aneurysms. (Erasmus Wilson demonstration.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Experimental Medicine.* Dr. G. A. Rose, Dr. Leslie Watson, Dr. B. E. C. Nordin: New Approaches to Calcium Metabolism.
8 P.M. *Psychiatry.* Dr. W. Linford Rees: Role of Stress in Psychosomatic Disorders.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Aleck Bourne: Influence of the Emotional Factor in Gynæcology.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. Louis Forman: Disturbances of Pigmentation.

INSTITUTE OF NEUROLOGY, The National Hospital, Queen Square, W.C.1
5.30 P.M. Dr. Harry Lander (Adelaide): Kuru (the Laughing Disease).

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
4 P.M. Sir Samuel Bedson: The Psittacosis-lymphogranuloma Group of Infective Agents. (Second Harben lecture.)

WEST OF ENGLAND CHILD HEALTH GROUP
8.30 P.M. (Children's Hospital, Bristol.) Prof. A. V. Neale: A Recent Tour Abroad.

MANCHESTER MEDICAL SOCIETY
8 P.M. (Clinical Sciences Building, York Place.) *Surgery.* Mr. H. M. Goldberg: Lesions of the Fundus of the Gall Bladder. Dr. J. R. Edge: Use of Steroids in Major Surgery for Debilitated Patients with Advanced Tuberculosis.

Wednesday, 10th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Prof. J. Z. Young: Nerve Regeneration. (Samuel Hyde lecture.)
5 P.M. *Pædiatrics.* Mr. James Robertson: Going to Hospital With Mother. (Film.)

POSTGRADUATE MEDICAL SCHOOL
2 P.M. Dr. Josephson: Renal Blood Flow Determinations in Man.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Henry Haber: Precancerous and Cancerous Conditions of the Skin.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Mr. Donald Barlow: Surgery of Pulmonary Tuberculosis Viewed in Perspective.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Chelsea Hospital for Women, Dovehouse Street, S.W.3.) Mr. C. M. Gwillim: Anatomy of Prolapse.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
4 P.M. Sir Samuel Bedson: The Psittacosis-lumphogranuloma Group of Infective Agents. (Last Harben lecture.)

EUGENICS SOCIETY
5.30 P.M. (Royal Society, Burlington House, Piccadilly, W.1.) Dr. J. A. Fraser Roberts: Human Genetics at Two International Conferences.

MANCHESTER MEDICAL SOCIETY
5 P.M. (Medical School, University of Manchester.) *Pathology.* Dr. Bernard Sandler: Testicular Biopsy, its Interpretation and Value in Infertility.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH, Edinburgh, 8
3.30 P.M. Mr. D. J. Waterston: Abnormal Development of the Heart and its Surgical Correction.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vincent Street, Glasgow
5 P.M. Sir Eric Riches: New Growths of the Kidney. (Lock lecture.)

Thursday, 11th

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Sir Archibald McIndoe: Problem of Facial Burns. (Bradshaw lecture.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Dr. Copeman: Medical Practice in the Tudor Period—2. The Growth and Status of Medical Practice. (Last FitzPatrick lecture.)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.1
7.30 P.M. Prof. P. C. C. Garnham and Dr. D. J. Lewis: Parasites of British Honduras with Special Reference to Leishmaniasis.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION
8 P.M. (11, Chandos Street, W.1.) *Psychotherapy and Social Psychiatry.* Dr. R. F. Hobson: The Analytic Attitude in Psychiatry.

HONEYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Mr. A. B. Wallace: Thoughts on Wound Healing and Wound Care.

UNIVERSITY OF ST. ANDREWS, Dundee
5 P.M. Prof. Dugald Baird: The Practical Importance of Clinical Research in Obstetrics.

Friday, 12th

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5.30 P.M. Prof. W. St. C. Symmers: Mycotic Disease.

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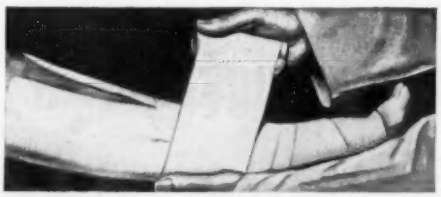

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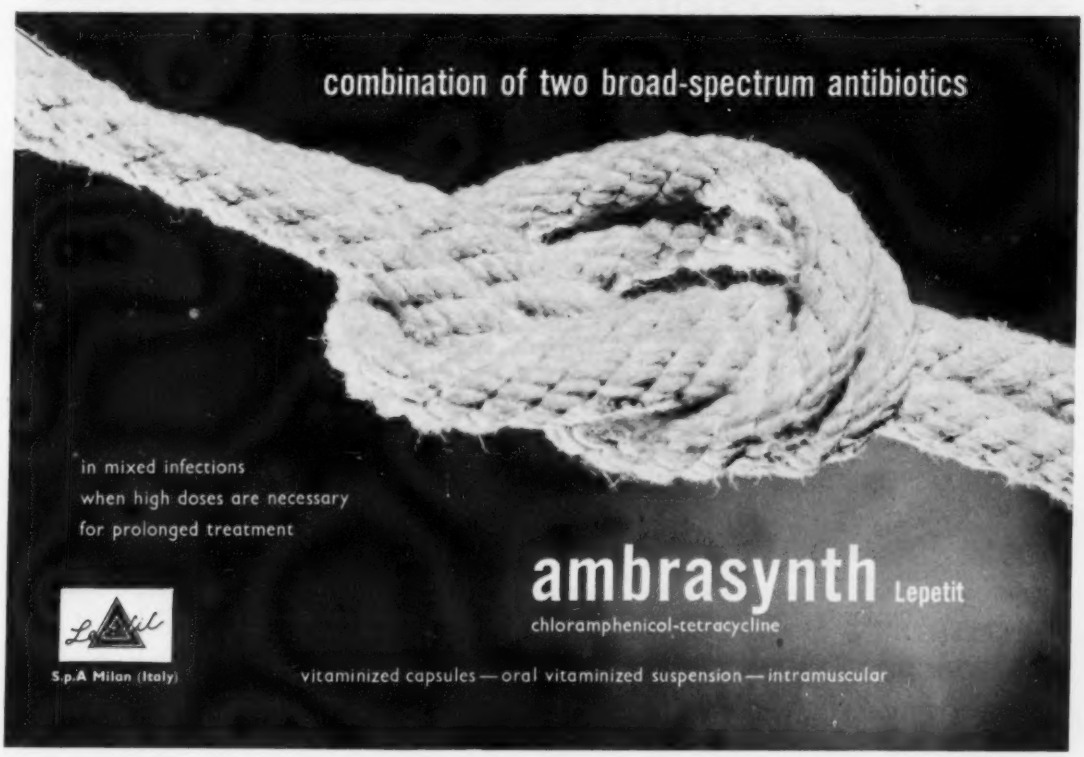

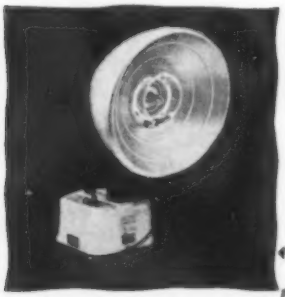

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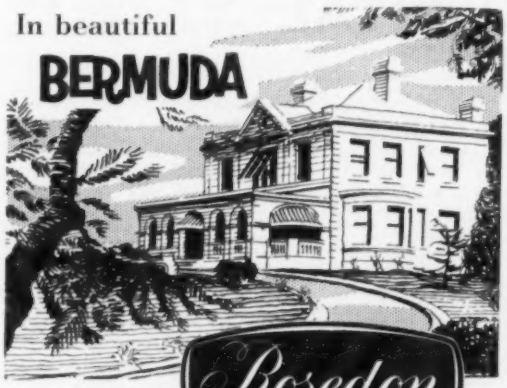

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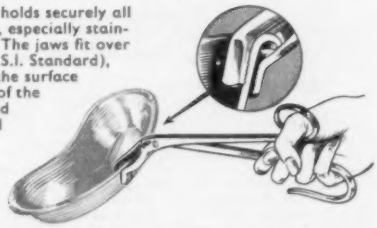

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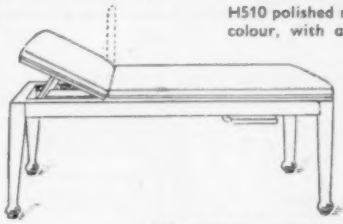

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Academic and Educational

THE NUFFIELD FOUNDATION
NUFFIELD INSTITUTE FOR MEDICAL RESEARCH

RESEARCH FELLOWSHIPS

The Nuffield Foundation, as an experiment, is prepared to offer 1 research fellowship annually in each of the 3 years 1958, 1959, and 1960, tenable at the Nuffield Institute for Medical Research at Oxford, to enable a suitably qualified person who intends to follow an academic career in obstetrics or paediatrics in the United Kingdom to concentrate for a year on animal experiments directly related to basic physiology or pharmacology in the foetus or the newborn.

Each fellowship will be tenable for 1 year and is limited to a graduate in medicine of a University within the British Commonwealth, who should *either* have completed an appointment as Registrar (or its equivalent) in an approved department of obstetrics or paediatrics, *or* be seconded for 1 year from such an appointment. He should also have obtained the higher qualification appropriate to his chosen specialty. The stipend will be within the approved range of salaries for Senior Registrars under the National Health Service.

Applications for the award beginning in 1959 must be received before 15th February, 1959, by the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, N.W.1, from whom full particulars and application forms can be obtained.

L. FARRER-BROWN, Director of the Nuffield Foundation.

THE NUFFIELD FOUNDATION

DENTAL FELLOWSHIPS AND SCHOLARSHIPS

The Nuffield Foundation invites applications, from citizens of the United Kingdom, for Fellowships and Scholarships in Dentistry. To help the advancement of teaching and research in the United Kingdom on dental health and disease, the Foundation is prepared to award a number of Fellowships:—

(i) to enable selected men and women with dental qualifications to receive such additional training in pure and applied science as is desirable to fit them for an academic career in dentistry (but not to obtain a medical qualification), and

(ii) to enable selected university graduates in medicine and science to receive training that will qualify them to undertake teaching and fundamental research on dental health and disease.

The Foundation is also prepared to award a limited number of Scholarships to assist students of outstanding ability attending a university dental school to devote 1 or 2 years to further studies of the basic sciences.

All applications must first be endorsed by the executive authority of the appropriate dental or medical school or scientific faculty of a university in the United Kingdom. They must be received by the Foundation by 1st March in the case of Fellowships, which are awarded once a year; and by 31st January and 30th June in the case of Scholarships, which are awarded twice a year. Copies of the conditions of both Fellowships and Scholarships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

POST-GRADUATE MEDICAL FOUNDATION

SCHOLARSHIP FOR NEUROSURGERY OR NEURORADIOLOGY IN THE CLINIC OF PROFESSOR H. OLIVECRONA, SWEDEN

Applications are invited from medical graduates for a Scholarship established by the Post-Graduate Medical Foundation, the University of Sydney, in Neurosurgery or Neuroradiology.

The object of the Scholarship is to provide tuition, training and experience in the Clinic of Professor H. Olivecrona in Stockholm, Sweden. The Scholarship will be tenable for 1 year in the first instance, but may be renewed for a second and third year.

Applicants must be under 45 years of age. They must have spent 2 years as resident medical officer in approved hospitals and hold a higher qualification in general surgery or radiological diagnosis. Preference will be shown to candidates possessing a knowledge of the Swedish language or proposing to practise neurosurgery or neuroradiology in New South Wales.

Scholars will be required to proceed to Sweden before 1st July, 1959, and remain in Sweden during the tenure of the Scholarship and to undertake a course of instruction in accordance with arrangements made by the Post-Graduate Committee.

The salary will be up to £A1200 for a single man and £A1500 for a married man. This will include all fares and allowances. In the event of the Scholar receiving a paid training appointment in neurosurgery or neuroradiology at the Clinic, the payment under the Scholarship will cease, unless the salary he receives is less than the amount he is entitled to under the Scholarship, in which case the difference between these 2 payments will be made up.

Applications should be lodged by 31st January, 1959, with the Post-Graduate Committee in Medicine in the University of Sydney, 131, Macquarie-street, Sydney.

Applicants must comply with the circular, "Information for Candidates", for the Scholarship, copies of which may be obtained on application.

COUNCIL OF EUROPE

MEDICAL FELLOWSHIPS, 1959

The Council of Europe is again offering a strictly limited number of Fellowships for the study of medical and surgical techniques in countries which are members of the Council. The Fellowships will be offered normally only to nationals of those countries, resident there. They will be available for a period of at least 3 months and not exceeding 12 months. Travelling expenses and a monthly stipend will be paid by the Council.

Forms of application (incorporating the regulations) and further information may be obtained from the Ministry of Health, Division 5A, Savile-row, London, W.1. The closing date for return of the completed forms of application is 15th January, 1959.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Notice is hereby given that an election of JUNIOR FELLOWS to begin work on 1st October next will take place in May, 1959. Junior Fellowships have successive annual values of £900, £950, and £1000 for 3 years. As a rule, superannuation benefits are provided, to which the successful candidates will be required to contribute 5% of the annual stipend and to which the Trust will make a contribution of 10%. Candidates must have taken a degree in a faculty of a university approved by the Trustees in Her Majesty's Dominions, Protectorates and Mandated Territories, India, Pakistan, and the Republic of Ireland, or a medical diploma registrable in the United Kingdom. Elections to Junior Fellowships are rarely made above the age of 35 years.

Applications from candidates must be received not later than 1st April. Candidates must submit evidence that they can be given accommodation in the departments where they propose to work, which must be either in Great Britain or Ireland. Forms of application and all information may be obtained by letter only, addressed to the Secretary, Beit Memorial Fellowships for Medical Research, The Lister Institute, Chelsea Bridge-road, London, S.W.1. For overseas candidates forms of application may be obtained from the Secretary, South African Medical Council, P.O. Box 205, Pretoria, South Africa; the Director, Commonwealth Office of Education, Box 3879, Sydney, Australia; the Department of Health, Wellington, New Zealand; and the Canadian Medical Association, 244, St. George-street, Toronto, Canada.

BRITISH ASSOCIATION OF PHYSICAL MEDICINE

A WEEKEND COURSE designed primarily for those taking the Diploma in Physical Medicine will be held on 16TH, 17TH and 18TH JANUARY, 1959.

Further details can be obtained from the Honorary Secretary of the Association, 47, Lincoln's Inn-fields, London, W.C.2.

THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY
330/332, Gray's Inn-road, London, W.C.1

INTENSIVE LECTURE PERIOD

Designed to give a clinical survey of the whole field of the specialty as a preliminary to practical training from 5TH JANUARY to 14TH FEBRUARY, 1959. Fees £18 18s.

Syllabus obtainable from the Secretary.

SYMPOSIUM ON BRONCHIAL ASTHMA

WEDNESDAY, 25TH FEBRUARY, 1959. Royal Society of Medicine, London.

Chairman (Morning), J. L. LIVINGSTON, F.R.C.P.;
(Afternoon) Sir GEOFFREY MARSHALL, K.C.V.O., C.B.E., F.R.C.P.

Fee 30s.

Details from National Association for Prevention of Tuberculosis and Diseases of the Chest and Heart, Tavistock House North, Tavistock-square, London, W.C.1.

UNIVERSITY OF GLASGOW AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS
POST-GRADUATE EDUCATION COMMITTEE

TEACHING WARD ROUNDS FOR POSTGRADUATE STUDENTS

These rounds will take place in the Teaching Hospitals of Glasgow and will be suitable for training for higher examinations in medicine or surgery. Students will be divided into sections and each section will have a tutor.

The second course will commence on 8th January, 1959, and last 10 weeks. The number of places will be limited and application should be made before 26th December, 1958, to the Honorary Secretary, Royal Faculty of Physicians and Surgeons, 242, St. Vincent-street, Glasgow. There will be a fee of 3 guineas for the course.

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane-road, W.12. REGISTRAR (Biochemistry) required 1st January, 1959. Duties include routine work demonstrations to the D.C.P. course and research. Equivalent of National Health Service terms.

Applications, with the names of 2 referees, to the Dean by 13th December, 1958.

UNIVERSITY OF BRISTOL. Applications are invited for the post of LECTURER (Grade II) IN PATHOLOGY (morbid anatomy) at a salary of £1200–£1950 p.a. according to qualifications and experience.

Applicants should send their full name, age, qualifications, details of education and experience, together with the names of 3 referees, to reach the undersigned, from whom further particulars may be obtained, on or before 6th January, 1959.

H. C. BUTTERFIELD, Registrar and Secretary.

THE UNIVERSITY OF LEEDS. Department of Medicine. Applications are invited for the post of RESEARCH FELLOW. The successful applicant will be expected to undertake research in conjunction with the Professor of Medicine. Applications would be especially welcome from candidates with a special knowledge of experimental techniques in relation to the study of diabetes mellitus. The Fellow will have clinical duties under the supervision of the Professor of Medicine, particularly in relation to diabetes mellitus, and the appointment will carry the honorary status of Registrar or Senior Registrar with the United Leeds Hospitals and the Leeds Regional Hospital Board. Appointment is for 1 year in the first instance, renewable up to 3 years. Salary range will be closely related to that of the comparable grade in the National Health Service.

Applications (3 copies) should reach the Registrar, The University, Leeds, 2 (from whom further particulars may be obtained), not later than 31st December, 1958.

UNIVERSITY COLLEGE, Cork. The Governing Body invites applications for the vacant full-time and pensionable PROFESSORSHIP OF PHYSIOLOGY. Salary: £1500–£60–£1800 p.a., plus children's allowances. The pension scheme is non-contributory. Particulars may be had from the undersigned.

Applications will be received up to 12 NOON on 17th January, 1959. JAMES HURLEY, Secretary.

UNIVERSITY OF OXFORD. The University proposes to appoint with effect from 1st October, 1959, or earlier if possible, a UNIVERSITY DEMONSTRATOR IN BACTERIOLOGY whose duties will be to assist in teaching bacteriology to medical students, to supervise advanced students and to carry out original research. Stipend in the scale £1200–£1900 (medically qualified) or £900–£1750 (non-medical) with F.S.S.U. and children's allowance of £50 p.a. for each child.

Applications (3 copies) by 1st April, 1959, to Dr. G. P. GLADSTONE, Sir William Dunn School of Pathology, South Parks-road, Oxford, from whom further particulars may be obtained.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for LECTURESHIP IN ORTHOPÆDICS in Department of Surgery. Initial appointment 3 years. Salary on scale: £1700–£100–£2100 p.a. Post carries honorary appointment as Consultant to University College Hospital. Passages paid for appointee, wife and 3 children under 11 years, on appointment, annual overseas leave and termination. Children's, car and outfit allowances. F.S.S.U. Part-furnished accommodation.

Detailed applications (10 copies), naming 3 referees, by 12th January, 1959, to Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

Hospital Services: Senior Appointments

MOORFIELDS EYE HOSPITAL, City-road, London, E.C.1. Applications are invited for the appointment of a Part-time CONSULTANT PHYSICIAN to the Hospital to attend at the High Holborn Branch for 1 outpatient session each week assessed at 5 hours, including travelling time. Candidates must be Fellows or Members of the Royal College of Physicians of England.

Applications (12 copies), naming 3 referees, should reach the undersigned by 20th December, 1958.

J. P. HEMING, House Governor.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

1. ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade), 5 half-days a week, Tavistock Clinic, 2–4, Beaumont-street, W.1. Good general experience in psychiatry required, together with training in psychoanalysis and experience in psychoanalytic group therapy. D.P.M. desirable. Clinic may be visited by direct appointment.

Applications before 5th January, 1959.

2. ASSISTANT CHILD PSYCHIATRIST (Senior Hospital Medical Officer grade), 6 half-days a week, Hertfordshire Child Guidance Service. Candidates may visit by appointment with the Medical Director, Child Guidance Clinic, Hill End, St. Albans.

Applications before 14th January, 1959.

3. CONSULTANT CLINICAL PATHOLOGIST, whole-time or maximum sessions, Edgware General Hospital, Edgware, Middlesex (647 Beds). Successful candidate will be required to take charge of the Bacteriological Department. Hospital may be visited by direct appointment.

Applications before 12th January, 1959.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2.

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the post of Full-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer grade) in the Department of Pathology (morbid anatomy).

Applications, together with names of 3 referees, should be sent to the House Governor to reach him by 31st December, 1958.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the appointment of CONSULTANT ANÆSTHETIST at the above Hospital as from 1st April, 1959, for a session on Tuesday mornings.

Applications, giving detailed information and the names and addresses of 3 referees, should reach the undersigned (from whom further information may be obtained) on or before 31st December, 1958.

R. E. LAWSON, Secretary and House Governor.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the appointment of CONSULTANT DERMATOLOGIST to the Hospital for 3 sessions a week. Applicants must be Fellows or Members of the Royal College of Physicians of London.

Applications (10 copies), stating age, qualifications and experience, with names of 3 referees, should be addressed to the Secretary to the Board of Governors not later than 24th January, 1959.

BRISTOL. UNITED BRISTOL HOSPITALS. Applications are invited for the appointment of ASSISTANT CARDIOLOGICAL PHYSICIAN. The appointment, which is of Consultant status, will be whole-time in the first instance.

Applications, stating age, qualifications and experience, together with the names of 3 referees, should be sent to the Secretary to the Board, Bristol Royal Infirmary, Bristol, 2 (from whom further particulars can be obtained), by Thursday, 1st January, 1959.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT DENTAL SURGEON (whole-time), Ipswich and East Suffolk area. Duties include participation in outpatient and operating sessions at Ipswich and East Suffolk Hospital and inpatient work in chest, mental, and long-stay hospitals in the area. Wide experience in specialty and higher qualifications necessary. Salary scale £1653 15s.–£2126 5s.

Applications (8 copies), stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 29th December, 1958. Candidates invited to visit by direct arrangement with Hospital Management Committee Secretary, Broughton House, Broughton-road, Ipswich.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT PHYSICIAN in Geriatrics (whole-time), Ipswich and East Suffolk Hospital Group. The duties, which will be mainly at Hartismere Hospital, Eye (127 Beds), and Stow Lodge Hospital, Stowmarket (152 Beds), will include participation in the area service under the Consultant Physician in Geriatrics. Candidates should be experienced in the physical methods applied in the rehabilitation of the elderly sick. Successful candidate will be required to reside in the vicinity of Eye. Higher qualifications, good experience in general medicine and experience in geriatrics necessary. Salary scale £1653 15s.–£2125 5s.

Applications (8 copies), stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 29th December, 1958. Candidates are invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Broughton House, Broughton-road, Ipswich.

EXETER CLINICAL AREA. South Western Regional HOSPITAL BOARD. Applications are invited for the appointment of ASSISTANT PSYCHIATRIST at Digby-Wonford Hospital, Exeter (611 Beds). The appointment will be on a whole-time basis in the Senior Hospital Medical Officer grade. The successful candidate will work under the general direction of the Medical Superintendent of Digby-Wonford Hospital: he will be required to be resident at Wonford in order to afford hospital cover.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 31st December, 1958.

LIVERPOOL REGIONAL HOSPITAL BOARD. Birkenhead GROUP. Applications are invited for the post of Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) in the above Group with duties mainly at St. Catherine's Hospital. Applicants should have general all-round experience in clinical pathology. The possession of a high qualification in pathology will be considered an advantage.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 55, Castle-street, Liverpool, 2, to be returned not later than 27th December, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the post of Part-time CONSULTANT RADIOLOGIST (maximum sessions), giving 6 sessions at Broadgreen Hospital and 3 sessions at Newsham General Hospital. Applicants must have a Diploma in Radiology and wide experience in the specialty.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 55, Castle-street, Liverpool, 2, to be returned not later than 27th December, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for the whole-time or maximum part-time appointment of CONSULTANT CHEMICAL PATHOLOGIST to The United Liverpool Hospitals. The person appointed would take charge of a newly-created Department of Chemical Pathology and would be granted the status of Clinical Pathologist (Part-time) in the Department of Pathology of the University of Liverpool. Candidates must possess a registrable qualification and an honours degree in chemistry or its equivalent and must have had experience in biochemistry.

Applications, giving full particulars of age, qualifications, &c., present and previous appointments and the names of 3 referees, should reach the Secretary, 80, Rodney-street, Liverpool, 1, by 20th December, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD, in conjunction with the Lancashire, Cheshire and Derbyshire County Councils, invite applications for the part-time (9 half-days weekly) post of ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer) to the Ashton-under-Lyne General Hospital, near Manchester, and adjacent School Eye Clinics in Lancashire, Cheshire, and Derbyshire. Hospital duties under the Consultant will amount to about 4 sessions a week, mainly refraction, the remainder of the time being at school eye clinics.

Application forms from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, should be returned by 16th December, 1958.

NEWCASTLE REGIONAL HOSPITAL BOARD. CONSULTANT RADIOLOGIST, whole-time or maximum part-time, for Darlington (559 Beds), Northallerton (396 Beds), and North and South Tees-side (2523 Beds) Groups of hospitals. Main duties in Darlington and Northallerton. To reside in Darlington area. Further particulars from Senior Administrative Medical Officer.

Applications, together with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SENIOR CASUALTY OFFICER required at the Rotherham Hospital, Doncaster Gate, Rotherham. Salary scale £1653 15s.–£52 10s.–£2126 5s. p.a. Tenure for a period not exceeding 4 years.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 27th December, 1958.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time or maximum part-time post of RADIOLOGIST on the staffs of the Aberdeen General Hospitals and the Aberdeen Special Hospitals in the grade of Senior Hospital Medical Officer.

Applications, together with the names of 2 referees, should be submitted by 31st December, 1958, to the Senior Administrative Medical Officer, 1, Albyn-place, Aberdeen, from whom further particulars and a form of application may be obtained.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. DUNDEE ROYAL MENTAL HOSPITAL and MARYFIELD HOSPITAL, DUNDEE. Applications are invited for a whole-time appointment of DEPUTY PHYSICIAN-SUPERINTENDENT AND PSYCHIATRIST (Consultant). The duties will be in Dundee Royal Mental Hospital (Westgreen Mental Hospital (660 Beds) and Gowrie House (100 Beds for acute mental illness)) and in the psychiatric ward and Outpatient Clinic of Maryfield Hospital, Dundee, a general and teaching hospital of 370 Beds. These Hospitals are associated with the University of St. Andrews. The persons appointed will be given an honorary appointment from the University. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 31st December, 1958.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT PSYCHIATRIST (5 half-days per week) at the Cassel Hospital for Functional Nervous Disorders, Richmond, Surrey. Applicants should have higher qualifications and special experience in psychotherapy and psychoanalysis.

Applications by letter (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to the Secretary (S.1), South West Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2, by 3rd January, 1959. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) at Horton Hospital, Epsom, Surrey. Candidates must possess the D.P.M., and have good psychiatric experience. A self-contained flat outside the main building is available.

Applications by letter (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2, by 3rd January, 1959. Applicants may visit Hospital by local arrangement.

AMENDED ADVERTISEMENT

OXFORD REGIONAL HOSPITAL BOARD/UNITED OXFORD HOSPITALS. PHYSICIAN-SUPERINTENDENT at Littlemore Hospital, Oxford, and CONSULTANT PSYCHIATRIST to both Boards. The appointment (whole-time or maximum part-time) will be mainly to the Oxford/Banbury Area Department of Psychological Medicine, but includes work as Consultant Psychiatrist to the United Oxford Hospitals, and membership of the staff of the Teaching Hospital. In addition to the D.P.M. applicants should hold a higher medical qualification. The successful candidate will be required to live within the curtilage of Littlemore Hospital.

Applications, stating age, experience and qualifications, and giving the names of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 12th January, 1959.

DUBLIN. ST. VINCENT'S HOSPITAL. Assistant RADIOLOGIST. The position is whole-time. Sessional payments in accordance with scales laid down from time to time by the Department of Health. Qualifications required : D.M.R.D. essential, and higher degree desirable.

Further details on application to Honorary Secretary, Medical Board, St. Vincent's Hospital, Dublin. Latest date for applications, 19th December, 1958.

NEW ZEALAND. THE SOUTH CANTERBURY HOSPITAL BOARD, TIMARU, NEW ZEALAND. Applications are invited for the post of E.N.T. SURGEON, which is a part-time appointment for an initial period of 3 years and renewable. Salary is governed by the Hospital Employment Regulations, and would be, according to qualifications and experience, up to £775 for work at Timaru Hospital. In addition there is a fortnightly clinic conducted at Oamaru, 55 miles distant, for which a fee of £10 10s. plus travelling time and mileage allowance is payable. The total salary will be approximately £1200 (N.Z. currency) p.a. for a senior man. The appointee would establish himself in private practice without financial obligation. First-class private hospital facilities are available in the town. Further particulars obtainable from the Medical Superintendent, Public Hospital, Timaru.

Applications, stating age, qualifications and experience, and enclosing not more than 3 copies only of recent testimonials, close on 14th January, 1959, with the Secretary, The South Canterbury Hospital Board, P.O. Box 88, Timaru, New Zealand.

Hospital Services: Junior Appointments

ALBERT DOCK ORTHOPÆDIC AND FRACTURE HOSPITAL, Alnwick-road, E.16. SEAMEN'S HOSPITALS GROUP. SENIOR HOUSE OFFICER for Receiving-room duties required on 22nd December. Post, which is normally resident, is recognised by the Royal College of Surgeons, and provides excellent experience in a wide variety of traumatic conditions received from the adjacent dockland and from shipping in the Port of London. Salary £819 10s.

Applications, stating age, nationality, qualifications, and experience, with the names of 2 recent referees, should be sent to the Secretary, Dreadnought Seamen's Hospital, Greenwich, S.E.10, not later than 13th December, 1958.

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. RESIDENT SURGICAL OFFICER, Junior Hospital Medical Officer grade. Vacant 15th December, 1958.

Apply Hospital Secretary, giving names and addresses of 2 referees.

CHINGFORD HOSPITAL, London, E.4. (104 Beds.) RESIDENT HOUSE PHYSICIAN required for 6 months with duties at other hospitals in the Group.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

DULWICH HOSPITAL, East Dulwich-grove, S.E.22. HOUSE OFFICER (obstetrics and gynæcology) required from 1st January, 1959. Pre-registration post. Recognised for D. Obst. R.C.O.G. There is an association with King's College Hospital Medical School for teaching purposes.

Apply, giving age and details of qualifications and experience, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, not later than 15th December.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE SURGEON to Gynæcological Department (recognised for M.R.C.O.G.). Duties to commence 1st February, 1959. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 18th December, 1958.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE SURGEON, with charge of general surgical beds. Appointment for 6 months from 1st February, 1959. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 18th December, 1958.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications for the 6-month resident appointment, vacant 14th January, of Pre-registration HOUSE PHYSICIAN should reach Group Secretary, Hackney Hospital, E.9, quoting GH/PHP.

GUY'S-MAUDSLEY NEUROSURGICAL UNIT. Applications are invited for the post of REGISTRAR (middle grade) for 1 year. The Unit, which is housed in the Maudsley Hospital, serves both Guy's Hospital and the Bethlem Royal and Maudsley Hospitals.

Applications should be made to K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark Hill, S.E.5.

HACKNEY HOSPITAL, London, E.9. (General—850 Beds.) Applications are invited for the 6-month resident posts, vacant 1st and 4th February, of HOUSE SURGEONS to Obstetric and Gynæcology Departments (2 vacancies—1 for pre-registration candidate, recognised for D.Obst.R.C.O.G.).

Apply Secretary, above address, by 19th December, quoting HH/OG.

HACKNEY HOSPITAL, London, E.9. (General—850 Beds.) Applications for 2 6-month resident posts, vacant 10th and 18th January, of Pre-registration HOUSE PHYSICIAN should reach Secretary, above address, by 15th December, quoting HH/PHP.

HACKNEY HOSPITAL, London, E.9. (General—850 Beds.) Applications for 2 6-month resident posts, vacant 16th January and 1st February, of Pre-registration HOUSE SURGEON (recognised for F.R.C.S.) should reach Secretary, above address, by 19th December, quoting HH/PHS.

HITHER GREEN HOSPITAL, Hither Green, London, S.E.13. HOUSE PHYSICIAN. Pre-registration post with duties in the medical and infectious wards, starting on 17th December, 1958.

Applications, with references from medical school, &c., to the Senior Physician (telephone HIT 3481).

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. 2 vacancies (1 resident, 1 non-resident) occur 1st February, 1959, for HOUSE PHYSICIAN. Appointment for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and post graded as House Officer. Duties include work in the Outpatient Department and Special Clinics as well as in wards. The resident post will be attached to the Cardiological firm during the 4 months in London.

Applications, stating date of birth, qualifications, with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 19th December, 1958.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL, E.2. Hospitals for Diseases OF THE CHEST. Applications are invited for the post of REGISTRAR IN ANÆSTHETICS (recognised for F.F.A. R.C.S.). The post is a whole-time one, non-resident and tenable in the first instance for 1 year. Duties include attendance at the Country Branch, near Letchworth, Hertfordshire.

Applications, stating date of birth, qualifications with dates, previous appointments held, and accompanied by copies of 3 testimonials, should reach the undersigned by 19th December, 1958. J. ROBBINS, House Governor.

London Chest Hospital, E.2

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—146 Beds.) Applications are invited for the pre-registration posts of 2 HOUSE PHYSICIANS, vacant 1st January, 1959.

Applications from provisional and fully registered candidates, stating age, nationality, qualifications and experience, with copies of 3 recent testimonials, to the Hospital Secretary by 17th December, 1958.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—146 Beds.) Applications are invited for the pre-registration posts of 3 HOUSE SURGEONS, vacant 1st January, 1959.

Applications from provisional and fully registered candidates, stating age, nationality, qualifications and experience, with copies of 3 recent testimonials, to the Hospital Secretary by 17th December, 1958.

MIDDLESEX HOSPITAL, W.1. Applications invited for posts of :—

SENIOR HOUSE OFFICER in Anæsthetics (non-resident).

JUNIOR RESIDENT ASSISTANT ANÆSTHETIST (graded as House Officer).

Vacant 1st February, 1959.

Forms of application, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 3rd January, 1959.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of REGISTRAR in the Department of Physical Medicine and Rheumatism.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 31st December, 1958.

MILE END HOSPITAL, Bancroft-road, London, E.1. (479 Beds.) HOUSE PHYSICIAN (pre- or post-registration). Post vacant 1st January, 1959.

Application forms, obtainable from Physician-Superintendent, to be returned by 12th December, 1958, with copies of not more than 3 testimonials.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. (123 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer grade) with certain duties as House Physician in the Children's Ward and Casualty Department. Post recognised for D.A. Vacant 1st January, 1959.

Applications, stating age, qualifications and experience, with copies of testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

German Hospital, E.8

MEDICAL REGISTRAR. Resident or non-resident.

King George Hospital, Ilford

ANÆSTHETIC REGISTRAR. Resident or non-resident. Recognised for F.F.A. R.C.S.

Harts Hospital, Woodford Green, Essex

REGISTRAR in Diseases of the Chest. Resident, married or single accommodation available.

Thorpe Coombe Maternity Hospital, E.17

OBSTETRIC REGISTRAR. Resident. Recognised for M.R.C.O.G.

Herts and Essex General Hospital, Bishop's Stortford

REGISTRAR in Pathology. Resident.

General Hospital, Rochford, Essex

PSYCHIATRIC REGISTRAR. Resident or non-resident. Duties in active physical treatment psychiatric unit under visiting Consultant from Runwell Hospital. Experience in the whole range of psychiatry.

Appointments subject to review after 1 year.

Application forms from Secretary, 40, Eastbourne-terrace, W.2, to be returned by 27th December, 1958.

NORTH MIDDLESEX HOSPITAL, London, N.18. Applications are invited from pre- and post-registration candidates for the post of RESIDENT OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON, 6 months' appointment from 1st February, 1959. Post recognised by Royal College of Obstetricians and Gynæcologists for Diploma, and as a combined post for Membership. Candidates must have held house appointment in either medicine or surgery. Large Obstetric and Gynæcological Department.

Applications (in own handwriting), giving full particulars, together with copies of recent testimonials, to Secretary of Hospital, by 18th December, 1958.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2 ; Shadwell, E.1 ; and BANSTEAD, SURREY. HOUSE OFFICER appointments.

(1) For 2 consecutive periods of 6 months, commencing 1st February, 1959 ; first period House Physician, Hackney-road (6 months) ; second period House Surgeon, Hackney-road (2 months), Casualty Officer, Shadwell (4 months).

(2) For 6 months commencing 1st February, 1959, as House Physician, Hackney-road.

(3) For 2 consecutive periods of 6 months, commencing 1st February, 1959 ; first period House Physician, Shadwell (6 months) ; second period House Surgeon, Banstead (3 months), Casualty Officer, Hackney-road (3 months).

Application forms may be obtained from the Secretary at Hackney-road, and should be returned with not more than 3 testimonials not later than 13th December, 1958.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited for the post of SURGICAL SENIOR REGISTRAR. Appointment will be for 5 sessions a week from 1st January, 1959. Candidates must hold F.R.C.S. diploma.

Applications on a form obtainable from the House Governor to be submitted by 29th December, 1958.

ROYAL NORTHERN HOSPITAL, Holloway, N.7, and THE CITY OF LONDON MATERNITY HOSPITAL, N.4. SENIOR HOUSE OFFICER in Gynæcology required at the Royal Northern Hospital on 1st January, 1959. At the end of 1 year, subject to satisfactory service, the candidate will be given the opportunity of proceeding to the appointment of Resident Medical Officer (Senior House Officer) at the City of London Maternity Hospital. The 2 appointments provide complete training for the M.R.C.O.G. examination.

Applications, with copies of recent testimonials, to be sent to the Hospital Secretary, Royal Northern Hospital, Holloway, N.7, by 16th December, 1958.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Registrar grade) to work at the Lawn Road Branch of the Royal Free Hospital. Terms and conditions of service in accordance with Registrar grade. Duties, which are for 1 year in the first instance, to commence on 1st January, 1959.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 20th December, 1958.

ROYAL FREE HOSPITAL GROUP. Applications are invited from either Men or Women medical practitioners for the appointment of ANÆSTHETIC REGISTRAR (resident). The appointment is for 1 year in the first instance, duties to begin on 1st January, 1959.

Application forms may be obtained from the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 20th December, 1958.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the undermentioned posts commencing 1st February, 1959, or as soon as possible :—

3 ORTHOPÆDIC REGISTRARS (full-time), non-resident. Preference will be given to candidates with a higher surgical qualification.

1 CLINICAL ASSISTANT (full-time). The post is graded as Senior House Officer status and will include assisting in outpatient and inpatient work. The work is that of a Junior Registrar and provides wide experience in orthopædics.

Applications to be received by 18th December. Forms of application can be obtained from the House Governor, 234, Great Portland-street, London, W.1.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE PHYSICIAN. Vacant 4th February, 1959, for a period of 6 months.

Forms of application from the Secretary.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (575 Beds.) SENIOR HOUSE OFFICER required for Chest Unit (60 Beds). Tuberculosis and non-tuberculous cases in wards. Opportunity for chest clinic experience.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to reach the Hospital Secretary within 10 days of the date of this advertisement.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SENIOR HOUSE OFFCER (anæsthetics). Post vacant 23rd December. Recognised for D.A. and F.F.A. R.C.S.

Applications, stating age, qualifications, experience, together with copies of 2 recent testimonials, to Group Secretary, Wandsworth Hospital Group, at above address.

ST. JOHN'S HOSPITAL, Lewisham, London, S.E.13. Applications are invited for the resident post of CASUALTY OFFICER (House Officer grade) vacant immediately. Recognised pre-registration appointment, but registered practitioners may also apply.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to the Hospital Secretary, St. John's Hospital, Morden Hill, Lewisham, S.E.13 (telephone LEE 3411).

ST. OLAVE'S HOSPITAL, Lower-road, S.E.16. House SURGEON required immediately. Pre-registration post.

Applications, with full details, to Hospital Secretary.

ST. OLAVE'S HOSPITAL, Lower-road, S.E.16. House PHYSICIAN required for post which will be vacant on 1st January, 1959.

Apply, with full details, to Hospital Secretary.

ST. OLAVE'S HOSPITAL, Lower-road, Rotherhithe, S.E.16. BERMONDSEY AND SOUTHWARK GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER, Casualty Department, at above Hospital, which becomes vacant on 1st January, 1959. Salary £819 10s. p.a. Post, recognised for F.R.C.S., is tenable for 6 months and is renewable.

Applications, together with full details, and names of 2 referees, to the Secretary at above address, within 1 week of advertisement.

ST. THOMAS'S HOSPITAL, London, S.E.1. Medical REGISTRARS (3 vacancies). Whole-time, from 1st April, 1959, for 1 year in the first instance.

Applications, naming 2 referees, to Clerk of the Governors by 20th December, 1958.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the X-Ray Diagnostic Department. Whole-time, for 1 year in the first instance.

Applications, naming 2 referees, to Clerk of the Governors by 20th December, 1958.

ST. THOMAS'S HOSPITAL, London, S.E.1. Registrar to the Ophthalmic Department for 1 year in the first instance from 7th February, 1959.

Applications, naming 2 referees, to Clerk of the Governors by 20th December, 1958.

THORPE COOMBE MATERNITY HOSPITAL, Walthamstow, E.17. (58 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER. Experience in obstetrics is essential. Salary £819 10s. p.a., less £150 p.a. for board-residence.

Applications, with full details and copies of 2 recent testimonials, should be sent to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of MEDICAL REGISTRAR for 1 year in the first instance from 1st January, 1959. This post will include a period of duty at the Whittington Hospital, N.19. Preference will be given to candidates holding higher qualifications.

Applications, with names of 2 referees, to T. F. W. MACKEOWN, Administrator and Secretary, by 15th December, 1958.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCK-INGHAMSHIRE HOSPITAL. HOUSE OFFICER (accident and orthopædic and children's general surgery) required 1st February, 1959. Pre-registration post but registered practitioners invited to apply.

Apply, with 2 names for reference, to Secretary-Superintendent,

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. SENIOR HOUSE OFFICER required for Regional Rheumatism Research Centre with additional duties in Department of Medicine. Post vacant January, 1959. Interviews 31st December.

Applications, with copies of 2 testimonials, to Administrative Officer by 20th December.

AYLESBURY. TINDAL GENERAL HOSPITAL. House PHYSICIAN (Chest Unit). Male or Female. Pre-registration post, but registered practitioners invited to apply. Vacant 24th December, 1958. Duties include care of about 25 chest cases (including tuberculosis chalets) and 4 clinics weekly, including refills, forming a progressive chest unit for the Aylesbury area. Instruction in bronchoscopy and bronchography given. An acute geriatric unit (27 Beds) and a medical outpatient clinic give general medical experience. No Casualty Department.

Apply, with 2 testimonials, to the Administrative Officer.

ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOSPITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (surgical) required (resident). Post recognised for F.R.C.S. examination. Vacancy immediate.

Applications, stating age, experience, &c., to the Group Secretary, Mid-Wales Hospital Management Committee, 31, North-parade, Aberystwyth, Cardiganshire.

ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOSPITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE SURGEON and HOUSE PHYSICIAN required at the above Hospital. Both vacancies occur on 1st January, 1959. Surgical post recognised for F.R.C.S.

Applications, quoting 2 referees, to Group Secretary, 31, North Parade, Aberystwyth, Cardiganshire, immediately.

ALTRINCHAM GENERAL HOSPITAL and ANNEXE and E.N.T. DEPARTMENT. (183 Beds.) Applications are invited for the following pre-registration posts vacant January, 1959:—

JUNIOR HOUSE OFFICER (medical).
JUNIOR HOUSE OFFICER (surgical).

Applications to Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER in Pathology. Previous clinical experience not essential.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 3 HOUSE SURGEONS, mid-January, 1959. 6 months' appointments, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (paediatrics) required at Ashton-under-Lyne General Hospital. Modern paediatric unit, good neonatal and premature baby experience. Recognised for D.C.H.

Applications, with copies of testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancs.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) HOUSE PHYSICIAN (pre-registration) required immediately.

Applications, naming 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BEDFORD GENERAL HOSPITAL. (424 Beds.) House SURGEON required. Pre- or post-registration, recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute surgical units. Holder of this appointment will be favourably considered for appointment as House Physician at the termination of contract.

Applications, with copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 acute beds.) SENIOR HOUSE OFFICER or HOUSE OFFICER, grading according to experience. Pre-registration post, but fully registered practitioners may apply. Hospital has Maternity Unit of 22 Beds and Gynæcological Annexe of 18 Beds. Married accommodation available.

Detailed applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. ASSISTANT PATHOLOGIST (Senior House Officer grade) required for Area Laboratory. Offers experience in all branches of pathology.

Detailed applications to Group Secretary.

BIRMINGHAM. HEATHFIELD ROAD MATERNITY HOSPITAL, 134, Heathfield-road, BIRMINGHAM, 19. OBSTETRIC HOUSE SURGEON required 1st February, 1959. Previous medical and surgical experience preferred. 50-Bed maternity unit with 18-Cot Premature Baby Unit attached. Large Antenatal Department. Appointment recognised for D.Obst.R.C.O.G.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) HOUSE PHYSICIANS (general medicine). 5 appointments vacant January, 1959. Recognised for pre-registration. Approximately 80 Beds in each firm of 2 Consultants and 2 House Physicians.

Applications, naming 2 referees, to Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) HOUSE SURGEONS (general surgery). 6 appointments vacant January, 1959. Recognised for pre-registration and F.R.C.S. Approximately 80 Beds in each firm of 2 Consultants and 2 House Surgeons.

Applications, naming 2 referees, to Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) Pædiatric Department. HOUSE PHYSICIAN. Vacant 1st February, 1959. Recognised for pre-registration and D.C.H. The department, under direction of 2 Consultant Pædiatricians, has 88 pædiatric beds and cots and 100 neonatal cots. Facilities given for postgraduate instruction and necessary attendance at clinics. Undergraduates of University of Birmingham attend department for clinical instruction.

Applications, naming 2 referees, to Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) Casualty Department (40,000 attendances yearly). SENIOR HOUSE OFFICER. Vacant immediately. Resident or non-resident. Recognised for F.R.C.S. Tenable for 6 or 12 months.

Detailed applications, with names of 2 referees, to Group Secretary.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (775 Beds.) E.N.T. Department. HOUSE SURGEON or SENIOR HOUSE SURGEON (resident). Vacant immediately. Recognised for D.L.O. This is a busy hospital with approximately 50 E.N.T. beds. Previous experience in E.N.T. work would qualify for senior grade.

Detailed applications, naming 2 referees, to the Group Secretary.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Stafford Group, 13, Foregate-street, Stafford**

REGISTRAR (obstetrics and gynæcology). Duties mainly at Groundslow Hospital, Tittensor, near Stoke-on-Trent (unit at present 37 Beds). Experience in specialty essential.

(2) **Shrewsbury Group, Royal Salop Infirmary, Shrewsbury**

REGISTRAR (obstetrics and gynæcology), Royal Salop Infirmary Copthorne Hospital. Considerable clinical responsibility. House Surgeon posts (only) recognised for M.R.C.O.G. Vacant 23rd December, 1958.

Application forms from Group Secretaries to be returned by 15th December, 1958.

(3) **Coventry (No. 20) Group, Coventry and Warwickshire Hospital, Coventry**

Locum Tenens SURGICAL REGISTRAR. Vacant 1st February, 1959–31st May, 1959. Resident. Experience specialty essential. Salary £19 5s. per week, less emoluments.

Applications to Group Secretary, giving details of previous experience and naming 3 referees, by 15th December, 1958.

BIRMINGHAM REGIONAL HOSPITAL BOARD. BIRMINGHAM REGIONAL BLOOD TRANSFUSION SERVICE require 2 or more Locum Tenens Part-time MEDICAL PRACTITIONERS to undertake sessional duties. Duties attending blood donor sessions in the Region. Remuneration £3 3s. per session.

Applications, naming 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 23rd December, 1958. Further information from Director, Blood Transfusion Service, 15, Ampton-road, Birmingham, 15, by appointment.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped beds 1033.) Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). Resident. Available January, 1959. Recognised for F.F.A. R.C.S.

Applications, stating age, qualifications and experience, with copies of 3 testimonials, to Medical Superintendent. Closing date 15th December, 1958.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped beds 1033.) ASSISTANT CASUALTY OFFICER (Senior House Officer.) Resident non-resident. Recognised for F.R.C.S.

Applications, giving qualifications, experience, age, and copies of 3 recent testimonials, should be sent to Medical Superintendent. Closing date 15th December, 1958.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped beds 1033.) Applications are invited for the following posts:—

5 HOUSE PHYSICIANS.
HOUSE PHYSICIAN (pædiatrics). Some duties at Moseley Hall Hospital for Children. Recognised for D.C.H.
2 HOUSE SURGEONS. Recognised for F.R.C.S.
2 HOUSE SURGEONS (gynæcology and obstetrics). Recognised for M.R.C.O.G.

All the above posts are pre-registration and are available between 14th January and 7th February, 1959.

Apply to Medical Superintendent, giving age, qualifications, and copies of 3 testimonials. Closing date 15th December, 1958.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped beds 1033.). SENIOR HOUSE OFFICER, E.N.T. Department (42 Beds). Resident. Available 14th February, 1959.

Applications, giving age, qualifications and experience, to Medical Superintendent. Closing date 15th December, 1958.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped beds 1033.) Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics). Recognised for D.C.H. Available 14th January, 1959.

Applications, stating qualifications, experience and age, with copies of 3 testimonials, to Medical Superintendent. Closing date 15th December, 1958.

BIRMINGHAM (near). SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. HOUSE PHYSICIAN. Pre-registration post, vacant beginning of January. General hospital offering good experience. 5 other resident medical staff.

Applications, with names of 2 referees, to Medical Superintendent as soon as possible.

BIRMINGHAM (near). SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. HOUSE SURGEON. Pre-registration post. General hospital offering good experience. 5 other resident medical staff. Post vacant beginning of January.

Applications, with names of 2 referees, to Medical Superintendent as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. HOUSE OFFICER (medical) required for the Professorial Unit for 6 months from 7th January, 1959.

Forms of application may be obtained from the House Governor and should be returned not later than 13th December, 1958.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of NON-RESIDENT SENIOR HOUSE OFFICER, for duty in the Casualty Department at the General Hospital, Birmingham. The post is tenable for 1 year.

Forms of application may be obtained from, and should be returned as soon as possible to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM, 16. ST. CHAD'S HOSPITAL. House PHYSICIAN. Vacant 7th January, 1959. Pre- or post-registration.

Applications, stating age, qualifications and experience, with copies of recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 16. ST. CHAD'S HOSPITAL. House SURGEON in Obstetrics and Gynæcology required. Vacant 7th January, 1959. Pre- or post-registration.

Applications, stating age, qualifications and experience, with recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 16. ST. CHAD'S HOSPITAL. House SURGEON required. Vacant 7th January, 1959. Pre- or post-registration.

Applications, stating age, qualifications and experience, with recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration appointment. Accommodation available for married officer with no children.

Apply, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Queen's Park Hospital, Blackburn

(1) HOUSE OFFICER (obstetrics and gynæcology) required for busy unit of 58 Beds taking normal and abnormal cases. Post vacant 23rd January, 1959. Recognised for membership and Diploma R.C.O.G. (obstetrics).

(2) HOUSE SURGEON required 23rd February, 1959. Post recognised for F.R.C.S. and approved for pre-registration purposes.

(3) HOUSE PHYSICIAN required 14th February, 1959. Post recognised for pre-registration purposes.

Royal Infirmary, Blackburn

(1) HOUSE SURGEONS (2) required 16th and 23rd February, 1959. Posts recognised for F.R.C.S. and approved for pre-registration purposes.

(2) HOUSE PHYSICIAN required 24th January, 1959. Post recognised for pre-registration purposes.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Fully registered HOUSE OFFICER (paediatrics) required 14th January, 1959. Post recognised for D.C.H. Duties as laid down by Consultant Paediatrician.

Applications, stating experience and giving names of 2 referees, to the Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN. ROYAL INFIRMARY AND QUEEN'S PARK HOSPITAL. MANCHESTER REGIONAL HOSPITAL BOARD. REGISTRAR, Department of Psychological Medicine. Post vacant mid-December, 1958. Opportunity for wide experience in the treatment of inpatients and outpatients in general hospitals (including psychiatric inpatients in general medical wards) under direction of Consultant Psychiatrist. Modern, self-contained flat available suitable for married man. Recognised for D.P.M. by Conjoint Board and Manchester University. Facilities for attending D.P.M. course, Manchester University, and studying for higher qualifications. Services of social worker and mental health workers.

Application forms from Group Secretary, Royal Infirmary, Blackburn.

BLACKPOOL VICTORIA HOSPITAL (354 Beds.) House OFFICER (orthopædic and traumatic surgery). Resident pre-registration post recognised for F.R.C.S. available from December, 1958, in the main acute general hospital serving the Blackpool and Fylde area.

Applications, stating age, experience and giving the names and addresses of 2 referees, should be sent to the Hospital Secretary.

BLACKPOOL VICTORIA HOSPITAL. (354 Beds.) SENIOR HOUSE OFFICER (anæsthetics). Post recognised for F.F.A. R.C.S. and D.A. and vacant December. This is a busy acute general hospital with a Regional Thoracic Surgical Unit. At junior level the staff consists of a Junior Hospital Medical Officer, a Registrar and 2 Senior House Officers. The post offers sound practical experience in Anæsthesia, with reasonable off-duty and regular postgraduate lectures.

Applications, stating age, qualifications, experience, and the names and addresses of 2 referees, should be sent to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (506 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Thoracic Surgery for duties at the Thoracic Surgical Unit at the above Hospital. The Unit provides facilities for the surgical treatment of tuberculous and non-tuberculous cases. In addition, the holder of this post takes a share in certain general surgical work at the Hospital, which takes cases from Bournemouth and parts of Hampshire and Dorset.

Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Shelley-road, Boscombe, Bournemouth, should be returned to him duly completed within 14 days of the appearance of this advertisement.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required to commence 20th January, 1959. The appointment offers comprehensive experience in the various Hospitals in the Group in the major specialties. No married accommodation available on hospital premises but every effort made to obtain suitable accommodation locally. The post is recognised for the D.A. and F.F.A. R.C.S.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of 2 HOUSE SURGEONS (general surgery). The appointments, which become vacant mid-December, are recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (general surgery) for a period of 6 months, to commence 21st December, 1958. The appointment is a resident one and recognised for the F.R.C.S. examination.

Applications to the Hospital Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE. (334 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON (pre-registration intern). The post becomes vacant on 11th December, 1958.

Applications to the Hospital Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HAMPSHIRE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery). The post becomes vacant on 18th January, 1959.

Applications to the Hospital Secretary.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

The Royal Infirmary, Bolton (246 Beds)

SENIOR HOUSE OFFICER (resident or non-resident) for Casualty Department with some orthopædic duties. Tenable for 12 months and recognised for F.R.C.S. Staff of 2 with Consultant supervision and adequate relief. Post offers good casualty accident experience.

RESIDENT HOUSE SURGEONS (2). Vacant 1st and 25th February, 1959. Tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

Bolton District General Hospital (607 Beds)

RESIDENT SENIOR HOUSE OFFICER in Medicine. Vacant 16th January, 1959, and tenable for 12 months.

RESIDENT HOUSE PHYSICIANS (2). Vacant 12th January and 24th February, 1959. Tenable for 6 months and recognised under pre-registration service scheme.

RESIDENT HOUSE SURGEON. Vacant 8th January, 1959. Tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BRISTOL AREA. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners in general practice in the Bristol area for appointment as CLINICAL ASSISTANTS in Dermatology. The vacant sessions are :—

Cossham Hospital: Monday mornings—1 outpatient session.

Southmead Hospital: Monday afternoons—1 outpatient session. Twice weekly—1 ward round equivalent to 1 session.

The successful candidate(s) will work under the general direction of the Consultant Dermatologists. Previous experience in dermatology is desirable. Payment will be at the rate of £183 15s. p.a. per weekly 3½-hour session.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 20th December, 1958.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. SENIOR HOUSE OFFICER, Regional Department of Neurosurgery. Vacant immediately, tenable for 6–12 months. The post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis. Recognised for F.R.C.S.

Applications to Group Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. BURNLEY GENERAL HOSPITAL (650 Beds), REEDYFORD MEMORIAL HOSPITAL, NELSON (95 Beds). RESIDENT HOUSE OFFICERS (surgical). The appointments are approved as pre-registration posts and recognised for F.R.C.S. Subject to satisfactory service, the successful applicants will be favourably considered for appointment as House Physicians at the termination of contract as Surgical House Officer.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURTON-ON-TRENT GENERAL HOSPITAL. (251 Beds.) HOUSE SURGEONS (general), pre-registration. Busy general base hospital for area. 8 residents. Full Consultant service. Excellent experience. Recognised for F.R.C.S. Married accommodation will be available for a joint post.

Applications to Group Secretary, General Hospital, Burton-on-Trent, Staffordshire.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Locum REGISTRAR in Obstetrics and Gynæcology required in the Brighton and Lewes Group from 8th December, 1958, to 4th January, 1959.

Applications, with details of qualifications, previous posts held, &c., and the names of 2 referees, to be sent immediately to the Group Secretary, Brighton and Lewes Hospital Management Committee, Royal Sussex County Hospital, Eastern-road, Brighton, 7 (Brighton 29153).

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (314 Beds.) SENIOR CASUALTY OFFICER (Junior Hospital Medical Officer grade) required for busy Casualty Department (2 junior medical staff). Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, together with the names of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (314 Beds.) CASUALTY HOUSE SURGEON required end December. Full and varied experience in busy Casualty Department (staff of 3), and also duties in Orthopædic and Traumatic Unit, including charge of beds. Recognised for pre-registration and F.R.C.S.

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (262 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for Casualty duties. Salary £852 10s.–£55–£1182 10s. a year, less £170 a year for resident single persons. Senior House Officer also employed.

Inquiries and applications to Hospital Secretary.

BUSHEY MATERNITY HOSPITAL, Bushey Heath, HERTFORDSHIRE. RESIDENT OBSTETRIC HOUSE SURGEON required for above Hospital. 6 months' appointment. Duties include antenatal and other clinics at the Edgware General Hospital, Edgware, Middlesex. Post vacant 6th January, 1959. Recognised for D.Obst.R.C.O.G. purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Edgware General Hospital by 20th December, 1958.

CAERPHILLY DISTRICT HOSPITAL. (Acute General Hospital—226 Beds, 6 miles from Cardiff.) RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS, 1st February, 1 with duties in Orthopædic Department; both recognised for F.R.C.S.

Applications to the Secretary.

CAMBRIDGE (near). FULBOURN HOSPITAL. Senior HOUSE OFFICER. Resident or non-resident. Previous psychiatric experience not required. This Hospital of 960 Beds is linked with the Cambridge University Department of Psychology and Addenbrooke's Hospital, and provides a basic psychiatric training leading to the D.P.M.

Applications, stating age, qualifications and experience, with names of 2 referees, should be sent to the Medical Superintendent Fulbourn Hospital, near Cambridge.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. HOUSE SURGEON (in Orthopædic Department) for 6 months from 29th January. Recognised pre-registration service.

Apply to the Secretary by 20th December, stating age, nationality, qualifications and experience, with dates, and with copies of 3 testimonials. Interviews late December early January.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. GYNÆCOLOGICAL HOUSE SURGEON (House Officer or Senior House Officer grading) for 6 months from 1st February, 1959. Recognised for pre-registration service and M.R.C.O.G.

Apply to the Secretary by 20th December, stating age, nationality, qualifications and experience, with dates, and with copies of 3 testimonials. Interviews early January.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. RESIDENT OBSTETRICAL OFFICER at Maternity Hospital, Mill-road, Cambridge, for 6 months from 1st February, 1959. Second or subsequent post, recognised pre-registration service. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G. examinations.

Apply, stating age, nationality, qualifications and experience, with dates, and copies of 3 testimonials, to the Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, Cambridge, by 20th December. Interviews early January.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of OBSTETRIC HOUSE SURGEON, which is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G., becomes vacant early January, 1959. National Health Service salary and conditions.

Applications, together with 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) E.N.T. and Eye Departments. SENIOR HOUSE OFFICER. Salary £819 10s. p.a. Post vacant January, 1959. Approved for F.R.C.S. and special diplomas.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF (near). PRINCE OF WALES ORTHOPÆDIC HOSPITAL, RHYDLAFAR, near CARDIFF. SENIOR HOUSE OFFICER required at above Hospital. Married or single accommodation available.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ST. DAVID'S HOSPITAL. (586 Beds.) Applications invited for post of SENIOR HOUSE OFFICER in Accident Unit at above Hospital, to commence 1st January, 1959. Post offers ample opportunity for practical experience in management of all types of injury under direction of Consultant.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (733 Beds.) 2 CLINICAL PATHOLOGISTS (Senior House Officer grade), resident or non-resident. Training given in all branches of pathology; opportunity to attend clinical rounds. Posts recognised for D.Path.

Applications, giving full details and names of 2 referees, should be made to the Group Secretary at above address by 20th December, 1958.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. (733 Beds.) HOUSE SURGEON (post approved for pre-registration service). General surgery with duties in genitourinary. Post vacant 12th January, 1959.

Applications, giving age, qualifications, &c., with copies of recent testimonials or the names of 2 referees, should be sent to the Secretary at above address.

CASTLEFORD, NORMANTON AND DISTRICT HOSPITAL. HIGHTOWN, CASTLEFORD. RESIDENT CASUALTY OFFICER (Senior House Officer grade) required. Married accommodation available.

Apply immediately to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter Row, Pontefract, Yorkshire.

CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Rotating Internship. A vacancy occurs for a HOUSE SURGEON, pre- or post-registration, at the Cheltenham General Hospital. The successful candidate on completion of his 6 months will be offered the post of House Physician, followed by that of Resident Obstetric Officer in the Group, if desired.

Applications, stating age and experience, and names of 2 referees, to be sent to the Group Secretary, General Hospital, Cheltenham.

CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Rotating Internship. A vacancy occurs for a HOUSE PHYSICIAN, pre- or post-registration, at the Cheltenham General Hospital. The successful candidate, on completion of his 6 months, will be offered the post of House Surgeon, followed by that of Resident Obstetric Officer in the Group if desired.

Applications, stating age and experience and names of 2 referees, to be sent to the Group Secretary, General Hospital, Cheltenham.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL. (Late Botley's Park War Hospital.) (440 Beds.) RESIDENT HOUSE SURGEON (intern) required. Post recognised for pre-registration service. Salary in accordance with terms and conditions of National Health Service. Post vacant 11th December.

Applications, with names and addresses of referees, to Physician-Superintendent.

CHESTER ROYAL INFIRMARY. Chester and District HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Junior Hospital Medical Officer), vacant 31st January, 1959.

Applications, giving full details, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary.

CHICHESTER. ST. RICHARD'S HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR, resident or non-resident, mainly at St. Richard's Hospital (400 Beds). Post vacant mid-February, 1959. Registrar will have care of 100 acute medical and pediatric beds under the supervision of the Consultant Physicians and Pediatrician and will also assist the Consultant Neurologist, Chest Physician and Thoracic Surgeon. Salary according to terms and conditions of service of hospital medical staff. Candidates may visit the Hospital.

Forms from Group Secretary, Chichester Group Hospital Management Committee, 174, Broyle-road, Chichester.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for :—

Essex County Hospital, Colchester, Essex (181 Beds)

Post of Locum MEDICAL REGISTRAR from 14th December, 1958, for period of few weeks.

Post of SENIOR HOUSE OFFICER to Casualty and Radiotherapy Departments. Tenable for 6 months or 1 year. Recognised for F.R.C.S.

Black Notley Hospital, Braintree, Essex (522 Beds)

Post of HOUSE OFFICER (orthopædic surgery). Duties include care of cases from London Hospital Orthopædic Department. Pre-registration or third post, tenable for 6 months. Recognised for F.R.C.S.

Post of HOUSE SURGEON. Pre-registration or third post. Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Tenable for 6 months.

Clacton and District Hospital, Clacton-on-Sea, Essex (58 Beds)

Post of SENIOR HOUSE OFFICER. Busy general hospital with regular outpatient sessions in all major specialties. Duties include medical, surgical, and casualty work, and the appointment offers practical all-round experience particularly useful to those entering general practice. Post tenable for 6 months or 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COVENTRY AND WARWICKSHIRE HOSPITAL, COVENTRY. HOUSE PHYSICIAN (pre-registration). Resident. Vacant 10th January, 1959.

Applications to Hospital Secretary.

COVENTRY. GULSON HOSPITAL. House Physicians (2 posts) (pre-registration). Vacant 17th January and 16th February, 1959, respectively. Resident.

Applications to Group Secretary, Coventry and Warwickshire Hospital, Stoney Stanton-road, Coventry.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for pre-registration post of HOUSE SURGEON. Salary in accordance with Whitley scale. 4 residents on staff. Post vacant mid-January.

Apply to the Secretary, Noble's Hospital, Douglas, Isle of Man.

DERBY. CITY HOSPITAL. (200 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th December, 1958, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) Applications are invited for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER (paediatrics), vacant 1st January, 1959, tenable for 6 months. Duties mainly surgical but include some medicine. Post recognised for D.C.H. and is open to pre-registration graduates.

Applications, with names of 2 referees, to be sent as soon as possible to Secretary.

DONCASTER ROYAL INFIRMARY. (330 Beds. Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required 22nd January, 1959. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th December, 1958, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

DONCASTER. WESTERN HOSPITAL. (Recognised under the Regulations for the D.Obst.R.C.O.G. and M.R.C.O.G. obstetrical experience) and approved for pre-registration service under the Medical Act, 1950.) Applications are invited for the post of OBSTETRICAL HOUSE OFFICER (Senior House Officer or pre-registration post). Vacant mid-January.

Applications, with particulars of experience and copies of 2 recent testimonials, should be forwarded to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary by 9th December.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

Burton Road Hospital, Dudley (1040 Beds)

SENIOR HOUSE OFFICER (general medicine and geriatrics). Resident. Post now vacant. Adequate off-duty time for studying.

Applications, naming 2 referees, to Group Secretary, Guest Hospital, Dudley, Worcs.

The Guest Hospital, Dudley (154 Beds).

SENIOR HOUSE OFFICER (anæsthetics). Post recognised for F.F.A. R.C.S. and D.A. Successful candidate will be required to visit other hospitals in the Group.

Applications, giving the names of 2 referees, to the Group Secretary, Guest Hospital, Dudley, Worcs.

HOUSE OFFICER (surgical), pre-registration. Post vacant now.

The Corbett Hospital, Stourbridge (114 Beds)

HOUSE OFFICER (surgical), pre-registration. Post vacant January, 1959.

Wordsley Hospital, near Stourbridge (478 Beds)

HOUSE OFFICER (surgical), pre-registration. Post now vacant.

HOUSE OFFICER (medical), pre-registration. Post vacant January, 1959.

Apply Group Secretary, Guest Hospital, Dudley, Worcs.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

MEDICAL REGISTRAR, West Norfolk and King's Lynn General Hospital, King's Lynn (146 Beds). Possibility of accommodation being available for married candidate.

ANÆSTHETIC REGISTRAR, West Norfolk and King's Lynn General Hospital, King's Lynn (146 Beds). Post recognised for D.A.

Appointments for 1 year, renewable for second year.

Applications, stating age, experience, and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 22nd December, 1958. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, St. James's Hospital, King's Lynn.

EDINBURGH. THE ROYAL EDINBURGH HOSPITAL FOR MENTAL AND NERVOUS DISORDERS. SENIOR HOUSE OFFICER, resident or non-resident, required at this Teaching Hospital. Good opportunities of training in psychiatry. Post now vacant.

Immediate applications, stating qualifications, experience, and names of 2 referees, to Physician-Superintendent, Royal Edinburgh Hospital, West House, Morningside-place, Edinburgh, 10.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN. Approved pre-registration. Vacant 12th January, 1959. General medical duties. 6 months' appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

FARNBOROUGH HOSPITAL, Farnborough, Kent. PRACTITIONER, Registrar status, required for 1 year in the first instance, to carry out simple studies in white blood-cell migration (cell window technique); later, some immunological research (tuberculosis). The Research Unit is in a progressive 800-Bedded general hospital where excellent clinical facilities, plus internal and external research liaison, should be attractive to an ambitious candidate. Salary at the rate of £1061 10s. a year.

Apply, immediately, naming 3 referees, to Hospital Secretary.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the vacant post of SENIOR HOUSE OFFICER in Medicine at Western District Hospital, Glasgow. The appointment will be for 1 year in the first instance. The Unit consists of 100 Beds for acute medicine. There is a Medical Library and facilities are available for study for higher medical degrees.

Applications, stating age, qualifications, experience, and present appointment, and naming 2 referees, to be lodged with the Secretary, 13, Woodside-place, Glasgow, C.3, by 13th December, 1958.

GLASGOW. GARTLOCH HOSPITAL, Gartcosh, Glasgow. RESIDENT HOUSE PHYSICIANS (2) required for 6 12 months from 1st February, 1959, for General Medical Unit of 104 Beds. Recognised pre-registration posts.

Applications, with particulars and names of 2 referees, to Medical Superintendent.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL, GLASGOW. Applications are invited for the post of SENIOR HOUSE OFFICER (resident) in Surgical Paediatrics at the above Hospital. National Health Service salary and conditions of service.

Applications, with names of 3 referees, to be lodged with the Secretary, Board of Management for Glasgow and District Children's Hospitals, 86, St. Vincent-street, Glasgow, C.2.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) required for 1st February, 1959, for above Hospital. Unit of 46 Beds. Medical library and reading facilities available.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital, Grimsby.

GUILDFORD. ST. LUKE'S HOSPITAL. Guildford GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR. Preference will be given to candidates holding higher qualifications. The post is recognised for the F.R.C.S. It offers experience in a busy unit which includes children. Some duties are undertaken at the neighbouring Royal Surrey County Hospital. The Hospital may be visited by arrangement with the Medical Superintendent.

Application forms from Group Secretary, Guildford Group Hospital Management Committee, St. Luke's Hospital, Guildford, to whom they should be returned by 20th December, 1958.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. 2 HOUSE SURGEONS (pre-registration) required. Posts vacant January.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

HEMEL HEMPSTEAD. ST. PAUL'S AND WEST HERTS HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Clinical Pathology required at above Hospitals. Post now vacant. Hospitals may be visited by direct appointment.

Application form obtainable from and returnable to Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Hertfordshire.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR required at above Hospital. Post recognised for F.F.A. R.C.S. Post vacant immediately.

Application form obtainable from and returnable to Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 16th December, 1958.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Pediatrician and Ophthalmic Consultant. Salary £819 10s. p.a., less £150 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence 22nd December, 1958. Applicants offering short-term locum periods considered.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON, General (first or second post) to commence 19th January, 1959. Pre-registration post; recognised under F.R.C.S. regulations. Applications will also be considered from fully registered practitioners.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HUDDERSFIELD. MILL HILL HOSPITAL. (164 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade), £852 10s.–£55–£1182 10s. p.a., at the above Hospital. The present allocation of beds is 28 for infectious diseases and 136 for geriatric patients.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.

The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee,

The Royal Infirmary, Huddersfield.

HEXHAM GENERAL HOSPITAL. (304 Beds.) Applications are invited for the following House appointments, vacant 7th January, 1959. Pre- or post-registration vacancies. Applications will be considered from final-year students in anticipation of graduation and also from registered practitioners.

HOUSE PHYSICIANS.
HOUSE SURGEONS (3). General, combined with orthopædics.

Hospital recognised by R.C.S. Large orthopædic unit providing excellent experience.

Applications, with names of 2 referees, to Group Secretary, General Hospital, Hexham, Northumberland.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (146 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON for General Surgical and Urological Surgery. The Hospital is the main surgical unit in the Group with a resident staff of 5. The post is recognised for F.R.C.S., for which it offers excellent experience. The appointment is for 6 months and falls vacant in mid-January.

Applications, stating age, nationality, qualifications and experience, with copies of 3 recent testimonials, or the names of 2 referees, should be submitted to the Administrator by 15th December, 1958.

HASTINGS. ST. HELEN'S HOSPITAL. (491 Beds.) HOUSE PHYSICIAN required. Pre-registration post vacant 31st December, 1958. Staff of 5.

Applications to Hospital Administrator.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD, ESSEX. There will be a vacancy for a CASUALTY OFFICER at above Hospital on 29th December, 1958, at a salary of £819 10s. p.a., resident or non-resident. Senior House officer grade. This post is recognised for the F.R.C.S.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,

Ilford and Barking Group Hospital Management Committee.

IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesea-ROAD WING). (350 Beds.) Applications invited for post of CASUALTY OFFICER (Senior House Officer grade), vacant 1st January, 1959. Post recognised for F.R.C.S. examinations.

Applications, stating age, nationality and experience, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesea-ROAD WING). (350 Beds.) Applications invited for SENIOR HOUSE OFFICER to Fracture and Orthopaedic Department. Post recognised for F.R.C.S. examinations. The Department has about 60 Beds and a large outpatient attendance, offering wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to Hospital Secretary.

IPSWICH. ST. HELEN'S HOSPITAL. (129 Beds for infectious diseases, pulmonary tuberculosis, long-stay orthopaedics and geriatrics. The area Chest Clinic is in the Hospital.) HOUSE PHYSICIAN required (post-registration appointment). Accommodation available for married man.

Applications to JOHN WILLIAMS, Group Secretary, Ipswich Group Hospital Management Committee, at the Ipswich and East Suffolk Hospital (Anglesea-road Wing), Ipswich.

IRVINE. AYRSHIRE CENTRAL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (infectious diseases.) Post offers wide experience under Consultant supervision in 122-Bed unit. Resident. Whitley terms.

Apply, giving names of 2 referees, to Area Medical Superintendent, 1, Hill-street, Kilmarnock.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER, Psychiatric Unit. Duties mainly in observation wards. Post recognised by Conjoint, Board and Royal Medico-Psychological Association as D.P.M. training post.

Applications to Group Secretary, West Middlesex Hospital, Isleworth, by 16th December, 1958.

KETTERING AND DISTRICT GENERAL HOSPITAL, SOUTHAMPTONSHIRE. Applications are invited for the post of HOUSE SURGEON (pre-registration) vacant now. Post recognised for F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 3 recent testimonials, to be sent to the Group Secretary at the above address.

KETTERING GENERAL HOSPITAL, Kettering. (144 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in Anæsthetics, vacant now. Post recognised for D.A.

Applications, giving details of qualifications and experience, and enclosing copies of 3 recent testimonials, to be sent to the Group Secretary, Kettering and District Hospital Management Committee, at the above address.

KETTERING. ST. MARY'S HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology at above Hospital. Post vacant early January, 1959. Previous experience is not necessary and the post would provide valuable experience in obstetrics and gynæcology for doctors intending to enter general practice at some future date.

Applications, giving particulars of qualifications and enclosing copies of 3 recent testimonials, should be sent to the Group Secretary, Kettering and District Hospital Management Committee, General Hospital, Kettering.

KIDDERMINSTER. BLAKEBROOK HOSPITAL. Applications are invited from registered medical practitioners for the appointment of CLINICAL ASSISTANT, which involves 1 session per week. The successful candidate will share with other medical officers the care of all chronic sick in the Hospital (244 Beds), and will undertake weekend responsibility on a rota basis. The appointment is subject to the terms and conditions of hospital medical staff, and remuneration is at the rate of £183 15s. p.a. per notional half-day.

Further particulars can be obtained from the Group Secretary, Mid-Worcestershire Hospital Management Committee, Birmingham-road, Bromsgrove, to whom applications, giving details of age, qualifications and experience, should be addressed not later than 19th December, 1958.

LANCASTER. ROYAL LANCASTER INFIRMARY. HOUSE OFFICER (pre-registration) (surgery). Post vacant 1st January, 1959. Successful applicant will work with Consultant Unit and will attend consultative clinics. Post tenable for 6 months.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. HOUSE OFFICER (pre-registration) (gynæcology obstetrics). Post vacant 1st February, 1959. Successful applicant will work with Consultant Unit and will attend consultative clinics. Post tenable for 6 months.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY. HOUSE OFFICER (pre-registration) (medicine). Post vacant 22nd January, 1959. Successful applicant will work with Consultant Unit and will attend consultative clinics. Post tenable for 6 months.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LANCASTER MOOR HOSPITAL, Lancaster. Applica-tions are invited for the post of SENIOR HOUSE OFFICER in Surgery at the Garnett Clinic, Lancaster Moor Hospital. This is a recently opened undesignated unit, completely modern in all aspects and devoted to neuro, general and orthopædic surgery. The post offers considerable opportunities for experience in all types of surgical work and for preparation for higher degrees. There is a fully equipped Electroencephalographic Department within the Clinic which will offer the successful applicant opportunities for training in the indications for and interpretation of this type of work.

Apply to the Medical Superintendent within 2 weeks of the appearance of this advertisement.

LEAMINGTON SPA. WARNEFORD HOSPITAL. (211 Beds.) Locum HOUSE PHYSICIAN required. Period 16th December, 1958–15th January, 1959.

Apply Hospital Secretary.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Hull A, Hull B, and East Riding Groups. Recognised for the F.F.A.R.C.S. Duties may include thoracic anæsthesia. Non-resident.

General Surgery

Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group. Resident.

Thoracic Surgery

Regional Thoracic Centre, Pinderfields General Hospital, Wakefield (50 thoracic surgery beds). Recognised for F.R.C.S. Accommodation for a single person.

Applications, stating age, qualifications, and details of present and previous appointments, with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 10th December, 1958.

LEEDS, 14. SEACROFT HOSPITAL. Junior Hospital MEDICAL OFFICER in Infectious Diseases. The Infectious Diseases Section, average bed occupancy 100, is an Infectious diseases undergraduate and postgraduate training unit and a Regional Poliomyelitis Centre. The appointment is resident and for 3 years in the first instance.

Applications, with full details and names of 2 referees, to Group Secretary, Leeds (Group B) Hospital Management Committee, Seacroft Hospital, Leeds, 14.

LEEDS. THE UNITED LEEDS HOSPITALS. Locum SENIOR REGISTRAR in Obstetrics and Gynæcology. Post vacant 1st January, 1959.

Applications, stating age, qualifications and experience, with dates, together with the names of 3 referees, to be sent to the Secretary of the Board, The General Infirmary, Leeds, 1, as soon as possible.

LIVERPOOL, 15. SEFTON GENERAL HOSPITAL. (995 Beds, 116 Cots.) SOUTH LIVERPOOL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following resident appointments which will become vacant at the above-named Hospital on 1st March, 1959, and will be for a period of 6 months. Those posts are approved as pre-registration posts :—

6 HOUSE PHYSICIANS (general).
2 HOUSE PHYSICIANS (psychiatric).
3 HOUSE SURGEONS (general).
2 HOUSE SURGEONS (obstetric).
1 HOUSE PHYSICIAN (tropical).

The terms and conditions of service will be in accordance with the regulations of the Ministry of Health.

Application forms may be obtained from the undersigned, to whom they should be returned not later than Saturday, 20th December, 1958.

GARNET CHAPLIN, Secretary to the Committee.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited from fully registered practitioners for post of SENIOR HOUSE OFFICER (medical) for Maidenhead General Hospital with duties at St. Mark's and Isolation Hospitals, Maidenhead. Appointment for 1 year commencing mid-January.

Applications, giving qualifications, experience, nationality and age, with 3 testimonials or names of 3 referees, to Secretary.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited for post of HOUSE SURGEON vacant mid-January. Pre-registration post.

Applications, stating age, qualifications and nationality, with names of 3 referees, to Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (441 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. Salary £819 10s. a year, less £150 a year for board and lodging. Post vacant February, 1959.

Applications to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant 3rd January, 1959. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE PHYSICIAN. 6-month appointment. Post vacant mid-February, 1959. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MAIDSTONE. PRESTON HALL CHEST HOSPITAL, BRITISH LEGION VILLAGE, MAIDSTONE, KENT. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital which contains 313 Beds for treatment of pulmonary tuberculosis and other chest diseases, and includes a major thoracic surgical unit. Furnished house available for married applicants. Salary £819 10s. p.a., national scale and conditions.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to be sent to the Group Secretary.

MANCHESTER, 19. DUCHESS OF YORK HOSPITAL FOR BABIES. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. There will be a vacancy at the above Hospital, which is associated with the Manchester University for teaching purposes, for a RESIDENT HOUSE OFFICER (Male or Female), post- or second pre-registration, for 6 months commencing 21st January, 1959.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer at the above address.

MANCHESTER. MONSALL HOSPITAL, Newton Heath, MANCHESTER, 10. RESIDENT SENIOR HOUSE OFFICER required for infectious diseases hospital, which is a Regional Centre for Poliomyelitis. There are also 150 Beds for the treatment of tuberculosis and other chest diseases.

Applications, with names of 2 referees, to Deputy Group Secretary, Monsall Hospital, from whom further particulars may be obtained.

MANCHESTER (near). PRESTWICH (MENTAL) HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER required at above Hospital. Single quarters available. All modern treatments practised and study facilities granted.

Applications, giving full personal details and the names and addresses of 2 referees, should be sent to the Medical Superintendent, Prestwich Hospital, P.O. Box No. 1, Prestwich, Manchester, not later than Saturday, 13th December, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. FAIRFIELD AND ROSSENDALE GENERAL HOSPITALS. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology. Post recognised for examinations of the D.Obst.R.C.O.G. Accommodation available for married officer.

Apply, stating full details and names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of Whole-time REGISTRAR in Orthopædics primarily for duty at Park Hospital, Davyhulme, but with occasional duties also at Wrightington Hospital, near Wigan. This is a new appointment concerned with the establishment of a special unit for the study of hip surgery and offers excellent opportunities for candidates with previous orthopædic experience. Residential facilities available at Park Hospital.

Application forms from Group Secretary, Park Hospital, Davyhulme.

MANCHESTER REGIONAL HOSPITAL BOARD. NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (chest disease) required to carry out duties arranged by the Consultant Chest Physician at the Altrincham, Northwich, Crewe Clinics and The Grange Hospital, Weaverham, and such other duties as may arise at any hospital within the North and Mid and South Cheshire Groups.

Applications, together with 2 recent testimonials, should be sent to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. WITHINGTON HOSPITAL, MANCHESTER, 20. The Board invite applications from registered practitioners for the post of MEDICAL REGISTRAR at the above-named Hospital.

Applications, stating age, qualifications, and previous experience, together with the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER REGIONAL HOSPITAL BOARD. Wigan AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Anæsthetics required with main duties at Royal Albert Edward Infirmary, Wigan. Resident or non-resident. Recognised for D.A. and F.F.A. R.C.S. Experience available in all branches of anæsthesia, particularly in thoracic surgery and major orthopædic surgery.

Applications to Secretary, Knowsley House, Wigan.

MANCHESTER (near). ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. SENIOR HOUSE OFFICER. 2 resident appointments vacant 1st February, 1959. Posts tenable for 12 months (6 months medical and 6 months surgical). Candidates with previous paediatric experience preferred.

Applications to Hospital Secretary not later than 15th December, 1958.

MANCHESTER (near). ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. SENIOR HOUSE OFFICER (surgical). 1 resident post vacant 1st February, 1959. Post tenable for 6 months. Candidates with previous paediatric experience preferred.

Applications to Hospital Secretary not later than 15th December, 1958.

MANCHESTER (near). ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. MEDICAL HOUSE OFFICER. 1 resident appointment vacant 1st February, 1959. Post is tenable for a period of 6 months, and is open to pre-registration graduates.

Applications to Hospital Secretary not later than 15th December, 1958.

MANCHESTER (near). ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. HOUSE PHYSICIAN (Professorial Unit, University Department of Child Health). 1 resident appointment (House Officer grade) vacant 1st February, 1959. The appointment is for a period of 6 months.

Applications to Hospital Secretary not later than 15th December, 1958.

MANCHESTER (near). ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. HOUSE OFFICER (medical and surgical duties). 1 resident appointment vacant 1st February, 1959. Post is tenable for a period of 6 months, and is open to pre-registration graduates.

Applications to Hospital Secretary not later than 15th December, 1958.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar grade).

Application forms may be obtained from the undersigned.

H. R. NORTH,
General Superintendent, Manchester Royal Eye Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from registered medical practitioners, Male or Female, for the post of HOUSE PHYSICIAN in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Health) for a period of 6 months, vacant 1st February, 1959. Previous hospital experience essential and paediatric experience desirable. Duties include the care of the newborn in the Maternity Department, the care of infants in the infants' ward, and work in the clinics under the charge of the Department of Child Health. Salary in accordance with national scale.

Applications, stating qualifications and experience, together with the names of 3 referees, should be sent to the undersigned not later than 22nd December, 1958.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) SENIOR HOUSE OFFICER (anæsthetics) required. Post now vacant. Hospital recognised for training for Diploma in Anæsthetics.

Applications, together with names and addresses of 2 referees, to be forwarded to the Group Secretary.

MANSFIELD (near), NOTTINGHAMSHIRE. HARLOW WOOD ORTHOPÆDIC HOSPITAL. (338 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER. The Hospital deals not only with long-term orthopædic but also with all other types of cases, including traumatic work. The post is recognised for examination purposes by the Royal College of Surgeons.

Applications to Group Secretary, Nottingham No. 5 Hospital Management Committee, Ransom Hospital, Rainworth, near Mansfield, Notts.

MID-HERTS GROUP HOSPITAL MANAGEMENT COMMITTEE. CLINICAL ASSISTANT(S) in Ophthalmology required for 6 sessions weekly. Duties include work at 3 School Eye Clinics—St. Albans (2 sessions), Hatfield (1 session), Welwyn Garden City (1 session) and hospital attendances for 2 sessions weekly to assist the Consultant at St. Albans City Hospital. The Committee are prepared to consider applications for all 6 sessions or for 3 sessions either (i) 2 school clinic sessions in St. Albans and 1 hospital session, or (ii) 1 Hatfield and 1 Welwyn Garden City session and 1 hospital session. Applicants should indicate the alternative for which he applies. Candidates must have special qualifications or experience in ophthalmology. Hospital and clinics may be visited by appointment. Salary £183 15s. p.a. per session.

Further details and application forms obtainable from and returnable to Secretary, Bleak House, Catherine-street, St. Albans, Herts, by 20th December, 1958.

MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the West Kent General Hospital, and the Kent County Ophthalmic and Aural Hospital, Maidstone (total beds 254). The post, which is of Senior House Officer grade, carries a salary of £819 10s. a year less £150 for residential emoluments. Excellent experience under Consultant Anæsthetists is available, and the post is recognised for the F.F.A. R.C.S. examination.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 suitable referees, should be forwarded to the Administrative Officer, West Kent General Hospital, Maidstone.

MINEHEAD AND WEST SOMERSET HOSPITAL, MINEHEAD, SOMERSET. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer) with care mainly of medical cases under Consultant staff. 1 other Senior House Officer. 6 months' or 1 year's appointment. Vacant 1st January, 1959. Salary £819 10s. p.a.

Applications to the Secretary, Minehead and West Somerset Hospital, Minehead, Somerset.

MIDDLESBROUGH. HEMLINGTON HOSPITAL (202 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (gynæcology) at the above Hospital. This post is recognised for pre-registration service and offers wide experience in gynæcology.

Applications, stating age and qualifications, together with 2 names for reference, should be addressed to the Hospital Secretary.

MIDDLESBROUGH. NORTH ORMESBY HOSPITAL. SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (Male or Female) at the above Hospital. The Medical Unit consists of 52 Beds and has an establishment for 2 House Officers, 1 post being already occupied. The post now being advertised is at present vacant and may be pre-registration House Officer or Senior House Officer grade according to experience. Furnished flat available early January.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be sent to the Hospital Secretary as soon as possible.

MIDDLESBROUGH. NORTH ORMESBY HOSPITAL. (184 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON to Surgical Team No. 1 at the above Hospital. The post is recognised for pre-registration service.

Applications, stating age, qualifications and experience and giving names for reference, should be addressed to the Hospital Secretary as soon as possible.

MITCHAM. WILSON HOSPITAL, Cranmer-road, MITCHAM, SURREY. RESIDENT HOUSE PHYSICIAN (not pre-registration). Vacant 8th December.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, to the Secretary at above address.

NANTWICH, CHESHIRE. BARONY HOSPITAL. REGISTRAR in Medicine required in February, 1959. This post is mainly for general medicine but offers experience in paediatrics and geriatrics. Whitley Council salary and conditions.

Applications, stating age, qualifications, experience, &c., together with names of 3 referees, to be submitted to the Group Secretary, Group Headquarters, Barony Hospital, Nantwich, by 10th December, 1958.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. Department of Neurological Surgery; Regional Unit. SENIOR HOUSE OFFICER. Post recognised for F.R.C.S. Now vacant, but applications from persons not able to commence until early January, 1959, will be considered.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Newcastle upon Tyne, 4.

NEWPORT, I.W. ST. MARY'S HOSPITAL. Isle of WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (Senior House Officer grade, at £819 10s. p.a.) required immediately. Post recognised for F.R.C.S.

Applications to Hospital Secretary immediately.

NEWTON ABBOT HOSPITAL. Resident Senior House SURGEON, Male or Female, required immediately, to act as Casualty Officer and House Surgeon to special departments, together with relief duties. Ability to give outpatient anæsthetics advantageous. Married quarters available.

Applications (quoting reference F.364/41), stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, South Devon.

NORWICH, LOWESTOFT AND GREAT YARMOUTH HOSPITAL MANAGEMENT COMMITTEE. Locum REGISTRAR in Anæsthetics required for period 26th January–14th May, 1959, whilst permanent holder of post on study leave. Resident or non-resident. Salary £19 5s. per week in accordance with terms and conditions of service of hospital medical staff. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience, to Group Secretary, Hospital Management Committee, St. Stephen's-road, Norwich.

NORWICH. ST. ANDREW'S HOSPITAL, Thorpe, NORWICH. Applications are invited from registered medical practitioners (Male or Female) for the appointment of SENIOR HOUSE OFFICER (psychiatric). The Hospital has 1250 Beds, an admission-rate of over 750 annually, and affords comprehensive experience in psychiatry. The salary and conditions of service will be as laid down by the Ministry for Senior House Officers. Residential accommodation with board available.

Applications, stating age, qualifications and full particulars of experience, together with the names and addresses of 2 referees, to be sent as soon as possible to the Medical Superintendent.

NOTTINGHAM EYE HOSPITAL. Senior House Officer (ophthalmology) required. Duties to commence on 23rd December, 1958. Salary and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Pre-registration HOUSE SURGEONS required. Duties to commence end January/beginning February, 1959.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (anæsthetics) required about 1st January, 1959. The post is recognised for the D.A. and the F.F.A. R.C.S. This is a busy general hospital, giving experience in all branches of surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (orthopædic and fracture) required. Duties to commence early January, 1959. Post offers exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (surgery) required. Duties to commence about 19th January, 1959.

Applications, stating age, qualifications, experience and nationality, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE PHYSICIANS required. Posts vacant mid-January, 1959, and early February, 1959.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. E.N.T. Department. A SENIOR HOUSE OFFICER (E.N.T.) required at the above Hospital. This post is recognised for the D.L.O. and F.R.C.S. examinations. Salary and conditions of service in accordance with Ministry regulations. Duties to commence as soon as possible.

Applications, stating age, qualifications, experience, and nationality, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM. GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty). Duties to commence as soon as possible.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Secretary, General Hospital, Nottingham.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE OFFICER (obstetrics and gynæcology—recognised for pre-registration purposes), which will be graded Senior House Officer or House Officer in accordance with experience. Recognised for the M.R.C.O.G. and D.Obst.R.C.O.G. Post vacant on 11th January, 1959.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Department of Thoracic Surgery. Post vacant in January, 1959.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, should be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE PHYSICIAN vacant on 11th January, 1959. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, NOTTINGHAM. Locum SENIOR HOUSE OFFICER (obstetrics) required for Obstetric Unit of 48 Beds during period 4th–14th December, or alternatively period 7th–14th December, 1958.

Apply, stating qualifications and experience, to Hospital Secretary.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, NOTTINGHAM. SENIOR HOUSE OFFICER (surgical) required. Duties to commence 5th January, 1959. Good opportunity for suitable candidate to gain experience in operating. This post is an excellent one for candidate who wishes to sit for Final F.R.C.S. examination in the near future.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Hospital Secretary.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell, NOTTINGHAM. Applications are invited from fully qualified medical practitioners for the post of SENIOR HOUSE OFFICER (obstetrics) in the Obstetrical and Gynæcological Departments (48 obstetrical beds, 11 gynæcological beds, and a small block for puerperal pyrexia). This Hospital is recognised for training for the D.Obst.R.C.O.G. Duties to commence on 1st January, 1959. Preference will be given to candidates who have experience in obstetrics and gynæcology. Terms and conditions of service as laid down by the Ministry of Health.

Apply, stating age, qualifications, and experience, together with copies of testimonials, to Hospital Secretary.

NUNEATON, GEORGE ELIOT HOSPITAL. House OFFICER in General Surgery. Recognised pre-registration and F.R.C.S. Resident.

Applications to Hospital Secretary, George Eliot Hospital, Nuneaton.

ORPINGTON HOSPITAL, Orpington, Kent. Resident SENIOR HOUSE PHYSICIAN (Male or Female) for Geriatric Department. Post offers good clinical experience and opportunity for higher studies. Hospital may be visited by appointment.

Applications, with copies 2 recent testimonials, to Surgeon-Superintendent immediately.

OSWESTRY. ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. REGISTRAR in Orthopædics, resident or non-resident. Experience specialty and higher surgical qualification desirable.

Application forms from Secretary to be returned by 20th December, 1958. Candidates may visit Hospital.

OXFORD REGIONAL HOSPITAL BOARD. Locum REGISTRAR in Anæsthetics to the hospitals of the Swindon area required for 3 months from 1st January, 1959.

Applications, with names of 2 referees, to the Secretary, 43, Banbury-road, Oxford.

OXFORD REGIONAL HOSPITAL BOARD. Locum SENIOR REGISTRAR in Psychiatry at St. John's Hospital, Stone, near Aylesbury, required for 3 months from 1st January, 1959.

Applications, with names of 2 referees, to the Secretary, 43, Banbury-road, Oxford.

OXFORD. UNITED OXFORD HOSPITALS. Senior REGISTRAR in Dental Surgery to the Churchill Hospital and Radcliffe Infirmary. Post recognised for the F.D.S.

Application forms, obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, should be returned to him by 23rd December.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. House SURGEON required for Orthopædic and Fracture Unit. Resident. Pre- or post-registration.

Applications to Group Medical Superintendent.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. Junior HOSPITAL MEDICAL OFFICER required for Orthopædic and Fracture Unit. Resident.

Applications to Group Medical Superintendent.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank-road, PLYMOUTH. HOUSE PHYSICIANS, pre-registration posts, vacancies 1st and 14th January, 1959.

Apply with names of 3 referees, also stating age, nationality, qualifications and experience, to the Group Secretary, 7, Nelson-gardens, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

HOUSE SURGEON, pre-registration post, vacant immediately. Devonport Section.

HOUSE SURGEONS, pre-registration posts, vacancies, 2 on 1st January, 1959. Freedom Fields Section.

HOUSE SURGEONS, pre-registration posts, vacancies, 1 immediately, and 9th January, 1959. Greenbank-road Section.

All posts are recognised for the F.R.C.S.

Apply with names of 3 referees, also stating age, nationality, qualifications and experience, to the Group Secretary, 7, Nelson-gardens, Plymouth.

PONTEFRACT GENERAL INFIRMARY. House Surgeon required. This is an approved pre-registration post under Medical Act, 1950, but applications will be considered from fully registered practitioners. Hospital approved under F.R.C.S. regulations and provides excellent surgical experience. Married accommodation available. Post vacant 19th December, 1958.

Applications as soon as possible to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorkshire.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following vacancies:—

(1) Locum HOUSE OFFICER (pediatrics) until 31st January, 1959, at the East Glamorgan Hospital, Church Village, near Pontypridd.

(2) HOUSE OFFICER (medicine) at the Llwynypia Hospital, Llwynypia, Rhondda. Person appointed will also be required to undertake duties at the Glyncornel Hospital (56 chronic Beds) and Tyntyla Isolation Hospital (42 Beds).

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be sent immediately to the Group Secretary, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Saint Mary's Hospital. Surgery—120 surgical beds

HOUSE OFFICER (pre-registration). Vacant 30th January, 1959.

Royal Portsmouth Hospital. Medical—61 medical beds

HOUSE OFFICER (pre-registration). Vacant 19th January, 1959.

Queen Alexandra Hospital. Medical—78 medical beds

HOUSE OFFICER (pre-registration). Vacant 1st January, 1959.

Saint Mary's Hospital

SENIOR HOUSE OFFICER (anæsthetics). Vacant now. Post offers experience in most branches of anæsthesia, including thoracic surgery, midwifery, and respiratory poliomyelitis. 6 Consultant Anæsthetists practise in the Group.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST, St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for post of RESIDENT SURGICAL REGISTRAR with duties mainly at Royal Portsmouth Hospital. Vacant 1st January, 1959. Recognised for F.R.C.S.

Application forms, obtainable from Group Secretary, Saint Mary's Hospital, Portsmouth, returnable by 15th December, 1958. Candidates may visit the Hospital by arrangement with Group Secretary.

PRESTON ROYAL INFIRMARY. (400 Beds.) Preston AND CHORLEY HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Neurosurgery. Post recognised for F.R.C.S. Vacant 1st January, 1959.

Applications, with names of 2 referees, to Group Secretary, Royal Infirmary, Preston, Lancashire.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS required at Birch Hill Hospital. 3 resident posts available in December/January.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (620 Beds.) Locum PSYCHIATRIC REGISTRAR required on month-to-month basis pending appointment being filled by the Regional Hospital Board, commencing approximately 15th December, 1958.

Applications to the Secretary as soon as possible.

ROCHFORD. GENERAL HOSPITAL. (620 Beds.) SENIOR HOUSE OFFICER required for Geriatric Unit (130 Beds) at the above Hospital. Post vacant 1st January, 1959. A wide range of facilities are available for the investigation, treatment and rehabilitation of acute and chronic inpatients and outpatients.

Applications, stating age, &c., to be sent to the Secretary as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. Resident PATHOLOGIST (Senior House Officer grade). This post, now vacant, provides valuable experience by rotation through all departments of this large Group Laboratory and is recognised for the purposes of the Diploma in Pathology. Prospective candidates are invited to visit the laboratory.

Applications should be sent, with testimonials or the names of 2 referees, as soon as possible to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required, 1 immediately and 1 on 3rd December next, in the General Surgical Unit. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully registered practitioners. This very active Unit of a total of approximately 180 Beds affords ample opportunities for candidates to obtain first-class tuition and experience. The candidates appointed will be attached to a unit of approximately 60 Beds.

Apply immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery), Male or Female, required from 6th January, 1959. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent, stating also names of 2 referees.

SALFORD, 6, LANCASHIRE. HOPE HOSPITAL. Salford HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Group Laboratory at Hope Hospital, Salford. On duty alternate weekends and approximately alternate nights. Previous experience in pathology not essential. The post is recognised for the Diploma in Pathology.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be forwarded to the Hospital Secretary.

SALISBURY GENERAL HOSPITAL. Applications are invited for the combined appointment of HOUSE SURGEON AND HOUSE PHYSICIAN to run consecutively in this order for a period of 6 months in each post from 19th February, 1959. Vacancy for Locum House Surgeon available for 16th December to 18th February. Posts open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. South West Metropolitan REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER in Anæsthetics (resident) at above Hospital which has special units. Recognised for the F.F.A. R.C.S.

Applications, as soon as possible, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR to the Royal Edinburgh Hospital for Mental and Nervous Disorders, for work in the first instance in the Professorial Unit at the Jordanburn Nerve Hospital. During the tenure of the post opportunities for study and interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh. Single accommodation available. The Hospital may be visited by arrangement with the Physician-Superintendent.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 20th December, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in E.N.T. Surgery at the Edinburgh Northern Group of hospitals.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 20th December, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in E.N.T. Surgery, Bangour General Hospital, Broxburn, with duties as required at the Royal Infirmary, Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 20th December, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR at Bangour Mental Hospital, Broxburn, West Lothian. During the tenure of the post opportunities for interchange of duty and training at other centres in the Region may be available under the joint training scheme of the South-Eastern Regional Hospital Board and the Department of Psychological Medicine of the University of Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 27th December, 1958.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Medical Paediatrics at the Royal Hospital for Sick Children, Edinburgh, vacant in April, 1959.

Apply, giving particulars of age, previous experience, and qualifications, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 27th December, 1958.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum RESIDENT ANÆSTHETIC REGISTRAR required 8th–14th December.

Applications, with names of 2 referees, to Secretary.

SEDGEFIELD GENERAL HOSPITAL, Sedgefield, Stockton-on-Tees. (336 Beds.) Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER in Gynæcology. Modern unit of 25 Beds, and post offers excellent experience in gynæcology and obstetrics. Full Consultant staff; married accommodation available; good medical library.

Detailed applications, together with the names of 2 referees, to the Group Secretary, North Tees-side Hospital Management Committee, at the above address as soon as possible.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (thoracic surgery) required immediately. Appointment for 1 year in first instance. The Hospital has a Regional Department of Cardiology. Thoracic Surgical Unit deals with tuberculous and non-tuberculous cases. Previous thoracic surgical experience desirable.

Apply to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th December, 1958, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts:—

(*a*) REGISTRAR or SENIOR HOUSE OFFICER in General Medicine at the Royal Infirmary. Grade according to qualifications and experience. Post vacant 25th January, 1959. Closing date for applications 19th December, 1958.

(*b*) REGISTRAR in Ophthalmology (non-resident) at the Royal Infirmary. Closing date for applications 12th December, 1958.

(*c*) REGISTRAR in General Medicine (non-resident) at the Royal Hospital. Closing date for applications 19th December, 1958.

(*d*) SENIOR HOUSE OFFICER to the Department of Neurology, Royal Hospital. Post vacant now. This is a large neurological department in a teaching hospital group. Post offers wide experience and opportunities for postgraduate training, and for attending postgraduate teaching in other departments. Closing date for applications 9th December, 1958.

(*e*) SENIOR HOUSE OFFICER in Plastic Surgery, Royal Hospital. Post vacant February, 1958. Closing date for applications 19th December, 1958.

(*f*) SENIOR HOUSE OFFICER to the Thoracic Unit, Royal Infirmary. Post vacant 15th January, 1959. Closing date for applications 12th December, 1958.

(*g*) 2 RESIDENT HOUSE SURGEONS, Children's Hospital. Post vacant from 15th January, 1959. Closing date for applications 12th December, 1958.

Applications should be addressed as follows:—

Posts (*a*), (*b*), and (*c*): Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, and should include the names of 3 referees.

Posts (*d*) and (*e*): Superintendent, Royal Hospital, Sheffield, 1.

Post (*f*): Superintendent, Royal Infirmary, Sheffield, 6.

Post (*g*): Superintendent, Children's Hospital, Sheffield, 10.

Applications for posts (*d*), (*e*), (*f*), and (*g*) should give names of 3 referees or enclose copy testimonials.

SHREWSBURY. ROYAL SALOP INFIRMARY. (216 Beds.) HOUSE PHYSICIAN. Pre-registration candidates eligible. Vacant immediately. Married accommodation available.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) Senior House Officer to work as CLINICAL PATHOLOGIST to Group Laboratory. Appointment tenable for 1 year, resident or non-resident. Recognised for Diploma in Pathology. Vacant 1st January, 1959. A Unit of the Public Health Laboratory service is housed in the same building and there are facilities for training in all the 4 main branches of pathology.

Applications to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SENIOR HOUSE OFFICER (gynæcological). 50 gynæcological beds and 2 House Surgeons. Posts recognised for M.R.C.O.G. Vacant early January, 1959.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A. R.C.S. Registrar also employed. Vacant 24th January, 1959.

Applications and copy testimonials to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for D.O. examination.) RESIDENT SENIOR HOUSE OFFICER required end of December.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (465 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required. Pre-registration candidate eligible.

Applications should be forwarded to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, with copies of recent testimonials.

SOUTHPORT GENERAL INFIRMARY. (189 Beds. Recognised for pre-registration.)

HOUSE PHYSICIAN (general medicine).

HOUSE PHYSICIAN (general medicine and ophthalmology).

HOUSE SURGEON (general surgery).

HOUSE SURGEON (general surgery and gynæcology).

Appointments vacant January. House Surgeon posts recognised for F.R.C.S.

Apply, stating age, qualifications, nationality, experience, and post required, with 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as a Whole-time REGISTRAR in Psychiatry to fill a vacancy in the Darenth and Stone Group of hospitals for duty at Darenth Park, Dartford (for the training of mental defectives). The hospital is 15 miles from London and facilities are made available for postgraduate study. Students from certain teaching hospitals attend for demonstrations. Previous experience in general medicine is desirable. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2, not later than 20th December, 1958.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Psychiatry to the Brighton and Lewes Group of hospitals. The appointment is for the new psychogeriatric unit at Brighton General Hospital, where a Consultant Geriatrician and a Consultant Psychiatrist both attend, and will also include general duties in other geriatric blocks at this hospital, and in the long-stay wards. The holder of the appointment will be expected to undertake relief duties for the Psychiatric Registrar to the observation unit at the same hospital. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales) and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 40, Eastbourne-terrace, W.2, not later than 20th December, 1958.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Psychiatry to the Brighton and Lewes and the St. Francis and Lady Chichester groups of hospitals. The appointment is for duties in the observation unit at Brighton General Hospital, which will include signing extensions of orders under the Lunacy and Mental Treatment Acts, and for duties at St. Francis Hospital, Haywards Heath. The appointment will commence at Brighton General Hospital and it is envisaged that the interchange will take place after 6 months. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales) and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, 40, Eastbourne-terrace, W.2, not later than 20th December, 1958.

SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration appointments which become vacant early in January, 1959.

Preston Hospital

1 HOUSE PHYSICIAN.

Tynemouth Victoria Jubilee Infirmary

1 HOUSE PHYSICIAN.

1 HOUSE SURGEON.

Applications, quoting 2 referees, to Group Secretary, Preston Hospital, North Shields.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time SURGICAL REGISTRAR. The appointment will normally be tenable for 2 years, but is subject to review at the end of the first year. The appointment offers particular opportunities for a wide experience in operative surgery of all kinds. The first year will be spent at the Royal South Hants Hospital (274 Beds) and the second year would be spent at the Southampton General Hospital (474 Beds).

Forms of application may be obtained from the undersigned, to whom they should be returned no later than 17th December, 1958, and candidates should state in their initial application if they wish to be considered on a locum basis until a permanent appointment is made. FRANK JENNINGS, Group Secretary,

Southampton Group Hospital Management Committee.

Bullar-street, Southampton.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON. Pre-registration post. Vacant January. At end of service the successful applicant will be considered for pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. RESIDENT CASUALTY OFFICER required. Junior Hospital Medical Officer status.

Applications, with names for reference, to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

ST. ASAPH HOSPITAL, St. Asaph, Flintshire. Appointment of HOUSE OFFICER. Duties divided between ophthalmology (16 Beds), E.N.T. (12 Beds), and oral surgery (4 Beds).

Applications, stating age, qualifications and experience, accompanied by 2 recent testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, Rhianfa, Russell-road, Rhyl.

ST. ALBANS CITY HOSPITAL. (384 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CASUALTY REGISTRAR required. Post recognised for F.R.C.S. regulations. Appointment tenable for 6 months from 1st January, 1959, and subject to review at end of this period.

Application forms obtainable from and returnable to Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts.

ST. ALBANS, HERTFORDSHIRE. NAPSBURY MENTAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER, appointment to commence immediately. Previous experience as House Physician or House Surgeon essential. Previous psychiatric experience desirable but not essential. Regular clinical case conferences, good psychiatric library and other training facilities. Salary £819 10s. p.a. Single accommodation is available, if required, for which a charge will be made.

Applications, with references or testimonials, to be sent not later than 15th December, 1958, to the Medical Superintendent (telephone: Bowmansgreen 3333).

ST. LEONARDS-ON-SEA. BUCHANAN HOSPITAL. (91 Beds. Obstetric, Gynæcological and Premature Baby Unit.) SENIOR HOUSE OFFICER required for Obstetric and Premature Baby Unit. Appointment, recognised for M.R.C.O.G., is vacant 8th January, 1959.

Applications, giving names and addresses of 3 referees, should be addressed to the Hospital Administrator.

ST. LEONARDS-ON-SEA. BUCHANAN HOSPITAL. (91 Beds.) Locum HOUSE SURGEON (gynæcology) required from 22nd to 28th December inclusive. Salary £10 9s. a week, less board.

Apply, with names of 2 referees, to the Administrator.

STOCKPORT AND BUXTON HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the following pre-registration posts :—

Stockport Infirmary (163 Beds)
HOUSE OFFICER (surgery), vacant now.
HOUSE OFFICER (surgery), vacant 1st January, 1959.
HOUSE OFFICER (surgery), vacant 6th January, 1959.
These 3 posts are recognised for the F.R.C.S.

Stepping Hill Hospital, Stockport (529 Beds)
HOUSE OFFICER (medicine), vacant 1st February, 1959.
HOUSE OFFICER (medicine), vacant 24th March, 1959.
HOUSE OFFICER (obstetrics), vacant 1st March, 1959. (Recognised for D.Obst.R.C.O.G.)
HOUSE OFFICER (surgery), vacant now.

Applications, with full particulars and copies of 2 testimonials, to be sent to the Group Secretary, 59a, Shaw Heath, Stockport.

STOCKPORT AND BUXTON HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties at Stepping Hill Hospital, Stockport (529 Beds), and Stockport Infirmary (163 Beds). The post is recognised for the D.A. and F.F.A. R.C.S., and there are ample opportunities for study. It is vacant 20th January, 1959.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59a, Shaw Heath, Stockport.

STOCKPORT INFIRMARY. Stockport and Buxton HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (non-resident Casualty Officer). Hours of duty: 8.30 A.M.–4.30 P.M. Monday–Friday; 8.30 A.M.–12 NOON Saturday. The post is recognised under F.R.C.S. regulations and would suit a candidate wishing to study for higher qualifications. It is vacant 15th December, 1958.

Applications, stating age, qualifications and experience, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59a, Shaw Heath, Stockport, Cheshire.

STOCKPORT. STEPPING HILL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant 1st February, 1959. The post is recognised for the D.Obst.R.C.O.G.

Applications, with full particulars and copies of 2 recent testimonials, to the Secretary, Stockport and Buxton Hospital Management Committee, 59a, Shaw Heath, Stockport.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (815 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (general surgery) required. Pre-registration post vacant now. Recognised for F.R.C.S. No casualty work.

Applications to the Hospital Secretary.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (medical), vacant early January. Recognised pre-registration post.

Detailed applications to the Secretary at the Hospital.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE PHYSICIAN required. Duties primarily in association with the Neurology Department and to act as deputy to the Resident Medical Officer (Senior House Officer grade).

Applications, with copy testimonials, to the Hospital Secretary as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICERS (general surgery) required. Pre-registration. 2 posts vacant early January. Recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Hospital Secretary, North Staffordshire Royal Infirmary, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post vacant very shortly. Some duties also at Hartshill Orthopædic Hospital.

Detailed applications, with copy testimonials, to Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (412 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Ophthalmic Department of the above Hospital. Immediate vacancy. The post is recognised for the F.R.C.S.(Eng.) and D.O. examinations.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary. T. E. JONES, Group Secretary.

SWANSEA HOSPITAL, Swansea. (412 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the locum appointment of CASUALTY OFFICER of Junior Hospital Medical Officer grade at the above Hospital, for the period 22nd December, 1958–12th January, 1959, inclusive.

Applications, giving full particulars, should be sent to the Hospital Secretary. T. E. JONES, Group Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for post vacant 22nd December. Pre-registration post.

Applications, stating age, qualifications with dates, with copies of 2 testimonials, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Special Unit for Research in Juvenile Rheumatism, vacant 18th January. Post offers scope for those interested in research, pædiatrics, rheumatology, or cardiology.

Applications, stating age, qualifications and experience, with dates, with copies of 2 testimonials, to Secretary.

TAUNTON (near). TONE VALE GROUP HOSPITAL MANAGEMENT COMMITTEE, NORTON FITZWARREN, near TAUNTON, SOMERSET. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER with duties mainly at Tone Vale Hospital, a modern psychiatric hospital of 1100 Beds, treating all forms of mental and nervous disorder and including a unit for psychotic children. The post provides an excellent opportunity for postgraduate training in psychiatry, including outpatient clinic work, and particularly in the study of child psychiatry not only with psychotic children in the unit at the Hospital, but also attendance at child guidance clinics in the county. Every facility is provided for study for the D.P.M., and facilities are also available for research and opportunities for work for the M.D. degree. Previous holders of this post have been granted special study leave. A detached house is available on the hospital estate at a reasonable charge or accommodation can be provided in the Hospital for a single person. The appointment will, in the first instance, be limited to 3 years and will be subject to the terms and conditions of service for hospital medical staffs. Present salary scale £852 10s. £1182 10s. p.a.

Applications, giving details of age, qualifications and experience, together with the names and addresses of 2 referees, should be forwarded to the Group Secretary, within 10 days of the appearance of this advertisement.

TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET. JUNIOR HOSPITAL MEDICAL OFFICER, Male or Female, required full-time, resident casualty and orthopædic work.

Applications, stating age, nationality, qualifications and experience, to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET. Locum HOUSE OFFICER (gynæcology and obstetrics) required immediately for approximately 6 weeks.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET. HOUSE OFFICER (general surgery) required. Pre-registration post. Recognised for F.R.C.S. Post vacant 14th January, 1959.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

TORQUAY. TORBAY HOSPITAL. (180 acute general beds.) HOUSE OFFICER (medicine), Male or Female, required for last week of November. Pre-registration appointment. General duties which will include some work in the E.N.T., the Ophthalmic, and Radiotherapy Departments.

Applications, stating qualifications, nationality, age, together with copy testimonials (quoting reference F.955/91), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Manor Hospital (340 Beds)
HOUSE PHYSICIANS (2).

General (Sister Dora) Hospital (181 Beds)
HOUSE PHYSICIANS (2).

The above Hospitals are acute general hospitals situated in a densely populated industrial area and give wide experience in all branches of medicine and surgery. Posts recognised for pre-registration. Duties mainly acute medical, with opportunities for additional experience in cardiology, chest diseases, diabetes, and dermatology.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Manor Hospital (340 Beds)
HOUSE SURGEONS (2).

General (Sister Dora) Hospital (181 Beds)
HOUSE SURGEONS (2).

The above Hospitals are acute general hospitals situated in a densely populated industrial area and give wide experience in all branches of medicine and surgery. Posts recognised for pre-registration. Hospitals recognised by R.C.S. Opportunities for experience in general surgery, orthopædics, gynæcology, and E.N.T. surgery.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WATFORD. SHRODELLS HOSPITAL. (380 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre- or post-registration), to take up duty early January.

Applications, with copies of 2 recent testimonials, should reach the Medical Officer-in-charge as soon as possible.

WATFORD. SHRODELLS HOSPITAL. Applications are invited for the post of GYNÆCOLOGICAL HOUSE OFFICER (Junior Hospital Medical Officer grade), to take up duty early January. Post recognised for the M.R.C.O.G.

Applications, together with copies of 2 testimonials, should reach the Medical Administrator as soon as possible.

WATFORD. SHRODELLS HOSPITAL. (General Hospital—380 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Unit. Resident or non-resident. This unit of 180 Beds, under a full-time Consultant Geriatrician, offers excellent clinical experience in diagnosis and treatment of acute and other illnesses in the elderly. Full laboratory and radiological facilities. Adequate time for reading.

Applications, together with copies of not more than 2 testimonials, should reach the Medical Administrator as soon as possible.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Male or Female) (graded as Senior House Officer). The post will be vacant early in January. The Hospital is recognised for the D.A. examination. Salary is £819 10s. p.a., less a deduction of £150 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to HENRY L. BOOT, Group Secretary, Warrington and District Hospital Management Committee, c/o General Hospital, Warrington, Lancs.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL. (228 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (thoracic surgery, resident), according to experience. Modern thoracic surgical unit with all forms of major and minor thoracic surgery undertaken. Post offers wide general training in cardiac, œsophageal and pulmonary surgery, mostly non-tuberculous. Facilities available for postgraduate study, recognised for F.R.C.S. Previous experience specialty not essential.

Applications to Medical Superintendent.

WELSH REGIONAL HOSPITAL BOARD

REGISTRAR (general surgery), Caernarvon and Anglesey General Hospital, Bangor (130 Beds). Non-resident. Hospital recognised for F.R.C.S.

REGISTRAR (psychiatry), St. David's Hospital, Carmarthen (1000 Beds). All modern forms of treatment carried out. Extensive outpatient service undertaken. Hospital recognised for training for D.P.M. Flat available. Vacant 1st January, 1959.

2 REGISTRARS in Plastic Surgery, St. Lawrence Hospital, Chepstow (182 Beds). Expected to visit other hospitals in South Wales area. Considerable opportunities for training in specialty. Accommodation for single person.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in General Medicine, based at Swansea Hospital, to serve Glantawe Hospital Management Committee.

REGISTRAR in General Medicine to serve West Wales Hospital Management Committee, based Pembroke County War Memorial Hospital, Haverfordwest (163 Beds). Might be expected to serve other hospitals in group. Resident/non-resident. Vacant 11th February, 1959.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST BROMWICH AND DISTRICT HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the following appointments. Pre-registration:—

West Bromwich and District General Hospital (344 Beds):
1 HOUSE PHYSICIAN.
1 HOUSE SURGEON.

Hallam Hospital (430 Beds)
2 HOUSE PHYSICIANS.
2 HOUSE SURGEONS.
2 HOUSE OFFICERS (obstetrics and gynæcology).

These posts will be vacant 8th January, 1959.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WESTCLIFF HOSPITAL, Balmoral-road, Westcliff-on-sea, ESSEX. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer grade). Post vacant 1st January, 1959. The Hospital covers a wide field of medicine and offers excellent training for general practice.

Applications, stating age, previous experience, and with copies of 2 recent testimonials, should be sent to the Secretary, General Hospital, Prittlewell Chase, Southend-on-Sea, not later than 11th December, 1958. J. C. FIELD, Secretary.

WESTON-SUPER-MARE GENERAL HOSPITAL. (104 Beds.) Applications are invited from duly qualified medical practitioners for the pre-registration appointment of HOUSE PHYSICIAN. Single residential accommodation provided. Vacant January, 1959.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Group Secretary, Weston-super-Mare Hospital Management Committee.

WOKING, SURREY. VICTORIA HOSPITAL. (72 Beds.) SENIOR HOUSE OFFICER (post-registration appointment) required for medical, surgical and casualty duties.

Apply, with 2 testimonials, to Hospital Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (324 Beds.) SENIOR HOUSE OFFICER, Pathological Department. Vacant 1st January, 1959. Preferably resident. Duties will include training in the various branches of clinical pathology, especially hematology. Previous experience in clinical pathology desirable, but not essential.

Applications, with copies of 2 testimonials, to the Hospital Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (324 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience under area orthopædic team. Appointment for 6 months in first instance. Vacant 13th December, 1958.

Applications, with copies of 2 testimonials, to the Hospital Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Registrar (Casualty Officer), resident or non-resident, required immediately. There is an Accident Unit of 30 Beds at the Hospital and, with the Casualty Department, forms part of the Accident Service for the Windsor Group. Candidates should have had previous experience in the treatment of acute injuries.

Application forms obtainable from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Almaroad, Windsor.

WOLVERHAMPTON. ROYAL HOSPITAL. Locum HOUSE OFFICER (general surgery) required for approximately 2 months, with a view to a 6-month appointment. Post recognised for F.R.C.S.

Apply, with copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. ROYAL HOSPITAL. Pre-registration HOUSE OFFICER (general surgery). Post recognised for F.R.C.S. 2 vacancies in January.

Apply, with copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An Associated Hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICER (pædiatrics). Post recognised for D.C.H. Vacant 26th January, 1959.

Apply, with copies of 2 testimonials, to the Secretary.

WOODFORD BRIDGE, WOODFORD GREEN, ESSEX. CLAYBURY HOSPITAL (for nervous and mental disorders). Applications are invited for the post of Full-time SENIOR HOUSE OFFICER, resident or non-resident. Board-residence for an unmarried applicant, for which a charge of £150 p.a. will be made, is available. The Hospital has over 2300 Beds and an admission-rate of over 1400 a year. All forms of treatment are undertaken, and outpatient clinics at general hospitals are run by the hospital staff. Clinical conferences are held weekly, and facilities will be offered to attend lectures in London (1 hour's journey). Previous general but not psychiatric experience necessary.

Applications, with full particulars and the names and addresses of 2 referees, to be sent to the Physician-Superintendent not later than 10 days after the appearance of this advertisement.

WORKSOP. VICTORIA HOSPITAL (119 Beds—26 orthopædics beds. Recognised for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (orthopædics and casualty) required 18th December, 1958. Furnished married accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th December, 1958, giving age, nationality, qualifications, present and previous appointments, with dates, naming 3 referees.

NORTHERN IRELAND HOSPITALS AUTHORITY. The Authority invite applications for a whole-time post as REGISTRAR or SENIOR REGISTRAR in Psychiatry at Londonderry and Gransha Hospital, Londonderry (a Mental Hospital). The terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44/46, Queen-street, Belfast, and to be returned not later than 27th December, 1958.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. The Board of Management invite applications from medical practitioners with the requisite postgraduate experience and qualifications for appointment as SENIOR REGISTRAR in the Anæsthetic Department.

The salary offered is £1542 p.a., rising by 3 increments to £1722 p.a. In addition an inducement addition is payable to an expatriate doctor of £300 p.a.

The appointment will be initially for 1 tour of 12 months and will be renewable by mutual agreement for a further tour of 12 months.

On satisfactory completion of the agreement a gratuity of £37 10s. will be paid for each completed term of 3 months' service.

An outfit allowance of £60 is payable on first appointment.

Partly furnished quarters are provided at a rental of 8⅓% of salary, excluding inducement allowance, and an expatriate doctor appointed will be eligible for 7 days' leave on full pay for each completed month of service in Nigeria. A Nigerian doctor is eligible for 5 days' leave for each completed month of service.

Free first-class passages are provided for expatriate doctors and their wives on first appointment and on completion of the agreement. Free first-class passages to Nigeria will, in certain circumstances, be provided for non-expatriate doctors. Free first-class passages will be provided for vacation leave.

Candidates will be eligible for children's allowances in accordance with existing regulations.

Arrangements can be made to enable doctors to continue their National Health Service superannuation scheme contributions, and details of the revised salary and gratuity payable in such cases will accompany application forms.

Applications should be submitted not later than 22nd December, 1958, on the appropriate forms, which will be forwarded, together with additional information, on receipt of an addressed foolscap envelope by the Adviser on Staff Recruitment, London Office, University College Hospital, Ibadan, 57, Catherine-place, Palace-street, London, S.W.1.

MICHIGAN, U.S.A. OAKWOOD HOSPITAL, Dearborn, MICHIGAN. Applications are invited for 1- or 2-year approved GENERAL PRACTICE RESIDENCY in modern 234-Bed general hospital 10 miles from Detroit. Excellent facilities. Hospital approved for Exchange-Visitor programme. Beginning monthly salary $250 if single, $300 if married. Free housing.

Apply: Director.

U.S.A. SAINT ELIZABETH HOSPITAL, Elizabeth, NEW JERSEY. 1-year ROTATING INTERNSHIP, A.M.A. approved. New programme in Community-Teaching Hospital. Medical Education and Research Department staffed by 35 carefully-selected Physicians who provide bedside and lecture teaching in specialties. Full-time staff members in pathology, medical education, radiology, all of whom have university faculty appointments. All patients teaching cases—active service department and clinics for interns. Courses available nearby Graduate Medical School, several conducted in Hospital, tuition paid by Hospital. Interns invited twice monthly for grand rounds at outstanding New York hospitals. Hospital located 20 miles from New York City. Limited vacancies for period 1st July, 1959–30th June, 1960. $125 monthly and maintenance.

Write: CHARLES R. REAM, M.D., Saint Elizabeth Hospital, Elizabeth 2, New Jersey.

U.S.A. VETERANS ADMINISTRATION HOSPITAL. RESIDENT HOUSE PHYSICIAN in Pathology. Training approved by American Examining Board in specialty. Salary $3000 first year to $5000 fourth year. This 500-Bed Hospital is a general teaching hospital integrated with the State University of Iowa College of Medicine and the University Hospital of 1500 Beds. Credit may be given for previous approved training. There are 6 British Physicians presently on University Hospital permanent staff in senior positions. Applicant must pass the examination of Educational Council for Foreign Medical Graduates (located at 1710 Orrington-avenue, Evanston, Illinois, U.S.A.). The examination is given in February and September. Write above address for examination in Britain.

Applications received by the Manager, U.S. Veterans Administration Hospital, Iowa City, Iowa, U.S.A.

CANADA. KINGSTON, ONTARIO. KINGSTON GENERAL HOSPITAL. Canadian teaching hospital of Queen's University offers approved ROTATING INTERNSHIPS for 12 months commencing 1st July, 1959. Vigorous intern-training programme. Opportunities for further appointments to more senior clinical posts and to research fellowships. Honorarium $100 per month plus full residential emoluments. Senior Medical appointment $175 per month also available.

Apply Superintendent, Kingston General Hospital, Kingston, Ontario.

CANADA. THE PRINCESS MARGARET HOSPITAL, 500, Sherbourne-street, TORONTO, 5, CANADA. Applications are invited for the position of RESIDENT INTERNE Staff in Radiotherapy for the period of 1st July, 1959, to 30th June, 1960. The salary at the rate of $200 per month plus maintenance. This post offers an ideal opportunity for training in Radiotherapy or as an introduction to cancer treatment and investigation. Applicants must possess qualifications of a British Commonwealth University and be registered with the General Medical Council.

Applications to the Chairman of the Interne Committee should be supported by copies of testimonials and a record of work since graduation. W. D. RIDER, M.B., Chairman, Interne Committee.

Public Appointments

NAVY, ARMY, AND AIR FORCE INSTITUTES. Applications are invited from medical practitioners (Male) for the part-time appointment (3 sessions weekly) of ASSISTANT MEDICAL OFFICER at the London Headquarters of this Corporation. Candidates should have considerable experience of general medicine, including experience in general practice. Remuneration will be in accordance with British Medical Association salary scale for Industrial Medical Officers.

Applications, stating age, qualifications and experience, should be sent to Chief Medical Officer, Navy, Army, and Air Force Institutes, Imperial Court, Kennington-lane, London, S.E.11, not later than 29th December, 1958.

NORTHAMPTONSHIRE. Applications are invited from registered medical practitioners holding a D.P.H. for appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Candidates must have had experience in the administration of the Public Health Service, preferably in a County Health Department, and in particular experience in the administration of the Mental Health Service is desirable. The salary will be on the scale £1700–£1965 p.a. Travelling and subsistence allowances on the scale from time to time approved by the County Council will be paid. The appointment will be superannuable, and the successful candidate may be required to pass a medical examination. The Officer will be required to devote his whole time to the duties of the office and to reside in or near Northampton. The appointment will be determinable by 3 months' notice on either side.

Applications, stating age, qualifications and experience, with the names of 2 referees, should reach the undersigned by 17th December, 1958.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton.

NOTTINGHAMSHIRE COUNTY COUNCIL. Appointment of Medical Officer. Applications invited from registered medical practitioners (either sex) for the whole-time appointment of SENIOR CLINICAL MEDICAL OFFICER. Salary within the scale £1250–£50–£1400–£55–£1510–£65–£1575, subject to a maximum commencing salary of £1400 p.a.

Applicants should :—

(*a*) Possess the D.P.H., D.C.H., or comparable qualification.

(*b*) Have had at least 3 years' experience as whole-time Clinical Medical Officer in the Antenatal, Child Welfare and School Health Services of a Local Authority since July, 1948.

(*c*) Have been approved by Ministry of Education for, and have had substantial experience in, the ascertainment of educationally subnormal children.

Application forms and conditions of appointment from the County Medical Officer, Shire Hall, Nottingham. Applications by 31st December, 1958.

A. R. DAVIS, Clerk of the County Council.

DERBY. COUNTY BOROUGH OF DERBY. Education COMMITTEE. Applications are invited for the post of SCHOOL MEDICAL OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH in the Public Health Department and School Health Service. Salary £1050–£1475 p.a. Applicants must be duly registered medical practitioners, and the possession of the D.P.H. or D.C.H. is desirable, though not essential. Duties will include work in connection with School Health and Child Welfare Services, and such other duties as may be required by the Council. The officer appointed will be required to devote his her whole time to the duties of the post and to act under the instructions of the Medical Officer of Health. The post is superannuable, and the selected candidate will be required to pass a medical examination. The appointment will be held during the pleasure of the Council and is terminable by 2 months' notice on either side.

Application forms may be obtained from the Director of Education, Education Office, Becket-street, Derby, to whom they should be returned, together with copies of not more than 2 recent testimonials, as soon as possible.

26th November, 1958. G. H. EMLYN JONES, Town Clerk.

SOMERSET COUNTY COUNCIL. Senior Medical Officer for Maternal and Child Health Services. Applications are invited from registered medical practitioners (Women) for this whole-time superannuable post. Candidates should hold the D.P.H. or D.C.H. and have wide experience in maternal, child health, and general public-health work. Car allowance. Salary scale £1520–£50–£1570–£55–£1955 p.a.

Details and application forms obtainable from Dr. J. F. DAVIDSON, County Medical Officer of Health, County Hall, Taunton. Closing date 19th December, 1958.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in parentheses after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Basildon, Essex (Basildon).
Melbourn, &c. (Cambridge).
Stevenage (Hitchin and Letchworth).
Annfield Plain (Newcastle upon Tyne).
Marden (Tonbridge).
Nottingham N.E. (Nottingham).
Wells, Somerset (Wells).
Woodbridge (Woodbridge).

SCOTLAND

Ladybank (Cupar).
Barrhill and Pinwherry (Girvan).

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Appointments of ASSISTANT COUNTY MEDICAL OFFICERS AND SCHOOL MEDICAL OFFICERS in the Batley Health Division and the Wortley (near Sheffield) Health Division. Applications invited from registered medical practitioners with at least 3 years' experience since qualification. Duties mainly in School Health and Infant Welfare Services. Salary £1050–£1475 p.a. County Council scale of travelling and subsistence allowances. Posts superannuable and subject to medical examination.

Forms of application from the undersigned to be returned not later than 20th December, 1958.

J. LEIPER, Deputy County Medical Officer.

County Hall, Wakefield.

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Temporary Appointment of ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. Castleford (No. 11) Division. Applications invited from registered medical practitioners, with preferably 3 years' experience since qualification, for the above temporary appointment which will be of at least 6 months' duration. Duties mainly in School Health and Infant Welfare Services. Salary £1050–£1475 p.a. County Council scale of travelling and subsistence allowances.

Forms of application from the undersigned to be returned not later than 20th December, 1958.

J. LEIPER, Deputy County Medical Officer.

County Hall, Wakefield.

GOVERNMENT OF QATAR. PERSIAN GULF. Applications are invited for the post of RADIOLOGIST in the Qatar State Medical Department. Salary is on scale 2700 rupees per month (equivalent to £2430 p.a.), rising by annual increments of Rs. 100 to a maximum of Rs. 3300 per month. Point of entry according to qualification. Contract is for 2 years or longer with probationary period of 6 months. Gratuity payable on termination of contract. Leave is six days for each month on duty and is taken annually. Free fully furnished accommodation, fuel, light, water, medical treatment, car, and return passages provided. No income-tax. Applicants should have a D.M.R.D. London or equivalent qualifications with experience of radiotherapy. Knowledge of Arabic an advantage. Radiologist is responsible for first-class radiological unit in modern hospital.

Applications, in duplicate, should be addressed to C. TENNANT SONS AND CO., LTD., 4, Copthall-avenue, London, E.C.2, giving full personal particulars, including photograph, and details of qualifications, experience, and employment, to arrive not later than 31st December, 1958.

GOVERNMENT OF BRITISH GUIANA. **Obstetrician** AND GYNÆCOLOGIST required to be in charge of wards and clinics of the Georgetown Hospital, to instruct Junior Medical Officers and nurses in obstetrics and undertake other duties as may be assigned by Director of Medical Services. Appointment on permanent basis with pension (non-contributory) 1.600th of final pensionable emoluments for each completed month of service; or on contract for 3 years' resident service with gratuity (taxable) of 22½% of salary for each 3 months' service. Candidates from National Health Service may retain superannuation rights during service abroad (up to 6 years) and receive gratuity of 20% of salary on leaving overseas employment. Salary £1800 a year, plus allowance of £250 a year in lieu of consultation fees. No private practice. Income-tax at local rates. Government quarters provided or allowance of £100 a year in lieu. Generous leave. Free passages for officer, wife, and children under 18, not exceeding 5 persons in all. Assisted passages on leave. Candidates must possess qualifications registrable in United Kingdom and M.R.C.O.G.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117 30 021).

GOVERNMENT OF THE NORTHERN REGION OF NIGERIA. PATHOLOGIST with qualifications registrable in United Kingdom required to carry out supervision of a District Laboratory, general pathological work, and training of Laboratory Technicians. 1 year's general pathological experience obtained in Pathology Department of a hospital essential. A higher qualification (e.g., D.C.P., D.P. or Dip.Bact.) an asset.

Appointment may be :—

(*a*) on 3 years' probation for permanent and pensionable employment. Pension (non-contributory) at rate of 1.600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) from National Health Service, officer retaining superannuation rights up to 6 years and receiving a gratuity (taxable) of 20% of aggregate of salary. Salary under (*a*) or (*b*) ranges from £972 to £1650 p.a., plus pensionable inducement addition ranging from £240 to £300 p.a., or

(*c*) on short-term contract (2 tours each of 18–24 months) with salary £1164–£1986, plus inducement addition ranging from £270 to £300 p.a. and gratuity (taxable) of £37 10s. for each completed period of 3 months' service (including leave). Starting-point in salary scale determined by experience and qualifications. Limited private practice permissible or staff pay £100 a year in lieu.

Quarters provided at low rental. Taxes at local rates. Annual leave permissible; generous home leave granted after each tour. Free passages in both directions for officer and wife; assisted passages for children under 18 up to cost of 1 adult return passage. This assistance may be used to pay wife's passage to visit children in officer's country of domicile. Allowances for children of £120 a year for first child, £96 for second, and £72 for third.

The Office of the Northern Region of Nigeria, Nigeria House, Northumberland-avenue, London, W.C.2, would be pleased to answer questions relating to conditions of service, climate, &c., in the Region.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117 408 029).

GOVERNMENT OF SIERRA LEONE. **Medical Officers** with qualifications registrable in United Kingdom required for general duties in the Colony or Protectorate, either in charge of Hospital and medical district, or attached to field unit to control endemic diseases. Women may be considered.

Appointment may be :—

(*a*) On permanent basis with pension (non-contributory) at rate of 1.600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service, candidates retaining superannuation rights up to 6 years, and receiving a gratuity (taxable) of 20% of aggregate salary.

(*c*) Short-term contract with gratuity (taxable) of 15% of aggregate gross salary, payable on satisfactory completion of engagement.

Salary under (*a*) and (*b*) £1248–£2046 a year, under (*c*) £1346–£2221, commencing-point fixed by qualifications and experience. Private practice may be allowed at discretion of Director of Medical Services.

Quarters normally available at low rental. Outfit allowance on first appointment £60. Return passages for officer, wife, and up to 3 children under 18 years. Children's allowance (subject to maximum of 3) of £48 a year (up to seventh birthday) and £96 a year (from seventh to eighteenth birthday) for children being educated outside Sierra Leone. Local leave permissible and generous home leave after each tour. Income-tax at local rates.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117 15 021).

DUBLIN, IRELAND. LOCAL APPOINTMENTS COMMISSION. Vacancy for ANÆSTHETIST (part-time), Meath County Council. Basic salary £809. Additional payment for attendance exceeding 15 hours a week. Essential qualifications include (*a*) a recognised Diploma in Anæsthetics or equivalent and (*b*) adequate experience in the administration of anæsthetics.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms: 5 P.M. on 31st December, 1958.

Hospital Services: Non-Medical Appointments

EPSOM. WEST PARK HOSPITAL MANAGEMENT COMMITTEE. BIOCHEMIST (basic grade) required. Salary £550–£1000 (plus London weighting) according to qualifications and experience. National Health Service Whitley Council conditions. Applicants with experience in routine medical biochemistry preferred, but suitable new graduates would be considered. Well-equipped laboratory. Opportunities for advanced and special work.

Apply, giving names of 2 referees, to Group Pathologist, Mental Hospitals' Group Laboratory, West Park Hospital, Epsom, Surrey.

General Practice

For an **Executive Council post** *(England and Wales) apply on form E.C.16a obtainable from the council. Mark envelope "Vacancy."*

KNIGHTON, RADNORSHIRE. **Applications invited for** VACANCY, chiefly rural. List at present approximately 1650. Residence and surgery available. Applications on Form E.C.16A to be received by the undersigned on or before 31st December, 1958.

K. J. EVANS, Clerk of the Radnorshire Executive Council.
County Hall, Llandrindod Wells.

Miscellaneous

Alfred Holt & Company (The Blue Funnel Line) have a vacancy for a Full-time Assistant Medical Superintendent. Applications are invited for this pensionable post, which combines clinical and administrative duties principally in the Liverpool area. Salary will be initially in the range recommended by the B.M.A. for Assistant Medical Officers. Candidates should be between 38 and 46 and should have good general experience; some knowledge of radiology is an advantage. The successful applicant will be required to serve as Ship's Surgeon for some months in the course of his training, which is designed to fit him for early promotion to Medical Superintendent. The present Medical Staff comprises 25 Ship's Surgeons and over 40 registered Male Nurses. The fleet, of about 70 cargo liners, trades principally between Europe and the Far East, Indonesia and Australia.

CONSULTING PATHOLOGIST

required by National Iranian Oil Company Limited to supervise and direct the Pathological Laboratory Service in the National Iranian Oil Company Hospital in Abadan and for a time in other oilfield areas, Southern Iran. Qualifications: Age 35–50 years. Minimum 3 years' experience in general pathology. A higher qualification in pathology or general medicine would be an advantage. Normal term of duty is 2 years with optional renewal either side. Salary not less than £3900 p.a. net. Married accommodation and free family first-class air passages. Schooling available at location in Abadan.

Apply to: Manager, Personnel Department, IRANIAN OIL SERVICES, LIMITED, 3, Finsbury-square, E.C.2.

PHYSIOLOGIST
required by "SHELL" RESEARCH LIMITED

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Literature and further information gladly sent on request

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GOVERNMENT OF BRITISH GUIANA. Obstetrician AND GYNÆCOLOGIST required to be in charge of wards and clinics of the Georgetown Hospital, to instruct Junior Medical Officers and nurses in obstetrics and undertake other duties as may be assigned by Director of Medical Services. Appointment on permanent basis with pension (non-contributory) 1/600th of final pensionable emoluments for each completed month of service; or on contract for 3 years' resident service with gratuity (taxable) of 22½% of salary for each 3 months' service. Candidates from National Health Service may retain superannuation rights during service abroad (up to 6 years) and receive gratuity of 20% of salary on leaving overseas employment. Salary £1800 a year, plus allowance of £250 a year in lieu of consultation fees. No private practice. Income-tax at local rates. Government quarters provided or allowance of £100 a year in lieu. Generous leave. Free passages for officer, wife, and children under 18, not exceeding 5 persons in all. Assisted passages on leave. Candidates must possess qualifications registrable in United Kingdom and M.R.C.O.G.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/30/021).

GOVERNMENT OF THE NORTHERN REGION OF NIGERIA. PATHOLOGIST with qualifications registrable in United Kingdom required to carry out supervision of a District Laboratory, general pathological work, and training of Laboratory Technicians. 1 year's general pathological experience obtained in Pathology Department of a hospital essential. A higher qualification (e.g., D.C.P., D.P. or Dip.Bact.) an asset.

Appointment may be :—

(*a*) on 3 years' probation for permanent and pensionable employment. Pension (non-contributory) at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) from National Health Service, officer retaining superannuation rights up to 6 years and receiving a gratuity (taxable) of 20% of aggregate of salary. Salary under (*a*) or (*b*) ranges from £972 to £1650 p.a., plus pensionable inducement addition ranging from £240 to £300 p.a., or

(*c*) on short-term contract (2 tours each of 18–24 months) with salary £1164–£1986, plus inducement addition ranging from £270 to £300 p.a. and gratuity (taxable) of £37 10s. for each completed period of 3 months' service (including leave). Starting-point in salary scale determined by experience and qualifications. Limited private practice permissible or staff pay £100 a year in lieu.

Quarters provided at low rental. Taxes at local rates. Annual leave permissible; generous home leave granted after each tour. Free passages in both directions for officer and wife; assisted passages for children under 18 up to cost of 1 adult return passage. This assistance may be used to pay wife's passage to visit children in officer's country of domicile. Allowances for children of £120 a year for first child, £96 for second, and £72 for third.

The Office of the Northern Region of Nigeria, Nigeria House, Northumberland-avenue, London, W.C.2, would be pleased to answer questions relating to conditions of service, climate, &c., in the Region.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/408/029).

GOVERNMENT OF SIERRA LEONE. Medical Officers with qualifications registrable in United Kingdom required for general duties in the Colony or Protectorate, either in charge of Hospital and medical district, or attached to field unit to control endemic diseases. Women may be considered.

Appointment may be :—

(*a*) On permanent basis with pension (non-contributory) at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service, candidates retaining superannuation rights up to 6 years, and receiving a gratuity (taxable) of 20% of aggregate salary.

(*c*) Short-term contract with gratuity (taxable) of 15% of aggregate gross salary, payable on satisfactory completion of engagement.

Salary under (*a*) and (*b*) £1248–£2046 a year, under (*c*) £1346–£2221, commencing-point fixed by qualifications and experience. Private practice may be allowed at discretion of Director of Medical Services.

Quarters normally available at low rental. Outfit allowance on first appointment £60. Return passages for officer, wife, and up to 3 children under 18 years. Children's allowance (subject to maximum of 3) of £48 a year (up to seventh birthday) and £96 a year (from seventh to eighteenth birthday) for children being educated outside Sierra Leone. Local leave permissible and generous home leave after each tour. Income-tax at local rates.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/15/02).

DUBLIN, IRELAND. LOCAL APPOINTMENTS COM-MISSION. Vacancy for ANÆSTHETIST (part-time), Meath County Council. Basic salary £809. Additional payment for attendance exceeding 15 hours a week. Essential qualifications include (*a*) a recognised Diploma in Anæsthetics or equivalent and (*b*) adequate experience in the administration of anæsthetics.

Application forms and particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms: 5 P.M. on 31st December, 1958.

Hospital Services: Non-Medical Appointments

EPSOM. WEST PARK HOSPITAL MANAGEMENT COMMITTEE. BIOCHEMIST (basic grade) required. Salary £550–£1000 (plus London weighting) according to qualifications and experience. National Health Service Whitley Council conditions. Applicants with experience in routine medical biochemistry preferred, but suitable new graduates would be considered. Well-equipped laboratory. Opportunities for advanced and special work.

Apply, giving names of 2 referees, to Group Pathologist, Mental Hospitals' Group Laboratory, West Park Hospital, Epsom, Surrey.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

KNIGHTON, RADNORSHIRE. Applications invited for VACANCY, chiefly rural. List at present approximately 1650. Residence and surgery available. Applications on Form E.C.16A to reach the undersigned on or before 31st December, 1958.

K. J. EVANS, Clerk of the Radnorshire Executive Council. County Hall, Llandrindod Wells.

Miscellaneous

Alfred Holt & Company (The Blue Funnel Line) have a vacancy for a Full-time Assistant Medical Superintendent. Applications are invited for this pensionable post, which combines clinical and administrative duties principally in the Liverpool area. Salary will be initially in the range recommended by the B.M.A. for Assistant Medical Officers. Candidates should be between 38 and 46 and should have good general experience; some knowledge of radiology is an advantage. The successful applicant will be required to serve as Ship's Surgeon for some months in the course of his training, which is designed to fit him for early promotion to Medical Superintendent. The present Medical Staff comprises 25 Ship's Surgeons and over 40 registered Male Nurses. The fleet, of about 70 cargo liners, trades principally between Europe and the Far East, Indonesia and Australia.

CONSULTING PATHOLOGIST

required by National Iranian Oil Company Limited to supervise and direct the Pathological Laboratory Service in the National Iranian Oil Company Hospital in Abadan and for a time in other oilfield areas, Southern Iran. Qualifications: Age 35–50 years. Minimum 3 years' experience in general pathology. A higher qualification in pathology or general medicine would be an advantage. Normal term of duty is 2 years with optional renewal either side. Salary not less than £3900 p.a. net. Married accommodation and free family first-class air passages. Schooling available at location in Abadan.

Apply to: Manager, Personnel Department, IRANIAN OIL SERVICES, LIMITED, 3, Finsbury-square, E.C.2.

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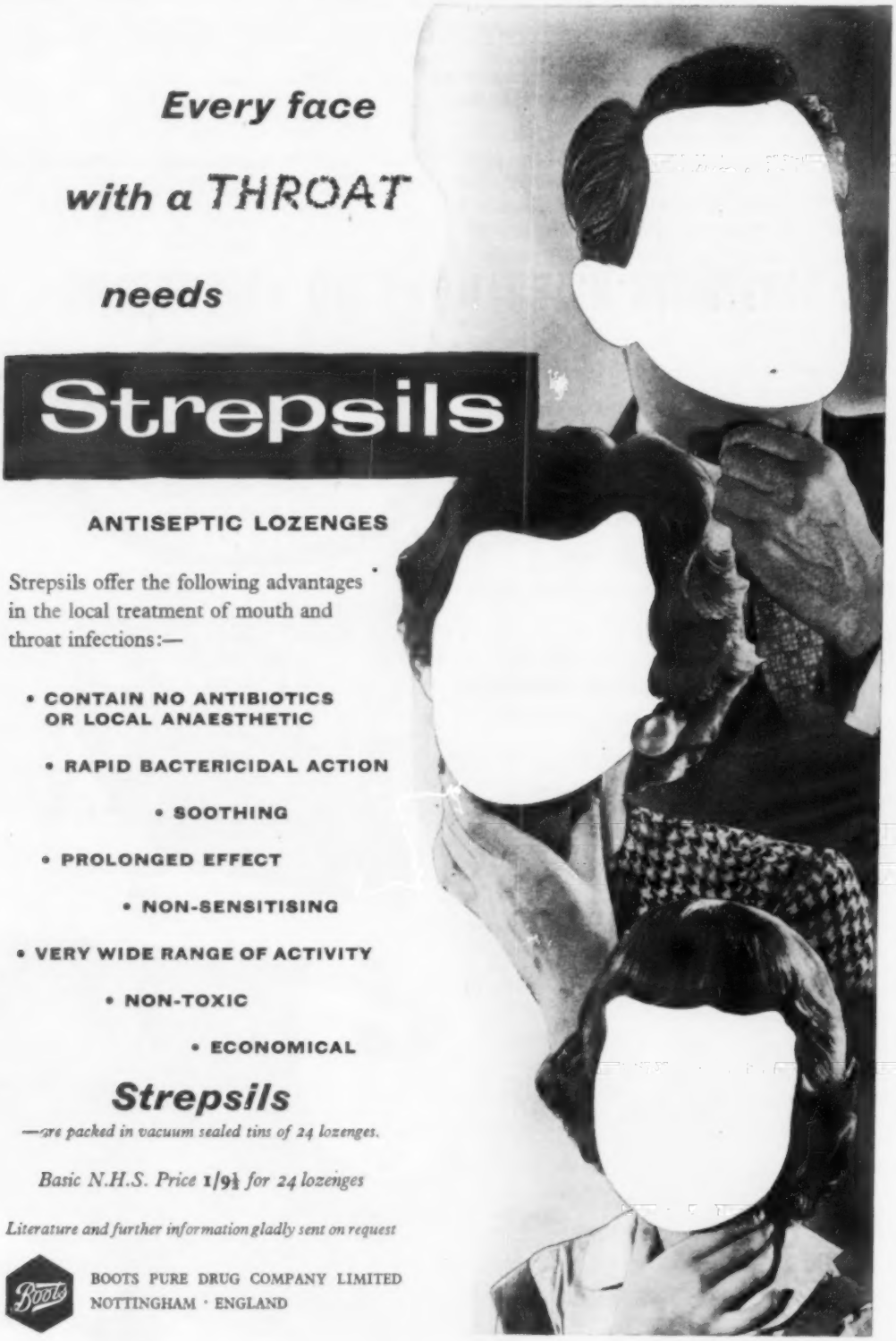

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